

3. RESULTS

This section discusses the results of compiling the contaminant inventory information for the data form entries with a known quantity. Section 3.1 provides an introduction, summary rollup tables of the inventory over all generators, and explanatory information for the entire inventory. Sections 3.2 through 3.8 present corresponding rollup tables and discussions for the seven major waste generators.

Because Section 3 contains many tables, the tables are placed at the end of the section for the convenience of the reader.

Section 4 discusses radionuclides and chemicals with contaminant quantities listed as "unknown" on the data forms.

3.1 Introduction and Totals

3.1.1 Introduction and Conventions Followed

All information on the contaminant inventory and the waste characteristics gathered in this task resides in the CIDRA database. Appendix B (Volumes 2 through 5 of this report) contains a complete printout of the information in CIDRA. For each of the 234 waste streams, the data forms provide the compiled information concerning the processes that generated the stream, the contaminant quantities and characteristics, the sources of information, and the assumptions made regarding the contaminants present.

Tables 3-1 and 3-2 provide the total best-estimate quantities of each contaminant in the inventory, covering all waste streams from all generators. Table 3-1 lists the nonradiological contaminants in terms of grams; Table 3-2 lists the radiological contaminants in terms of curies at the time of disposal.

For convenience, tables of contaminant inventories in this section are each given in two versions. The tables are designated with an "a" or "b." The "a" tables present the contaminants in the waste in order of best estimate quantity; the "b" tables present the contaminants in alphabetical order.

For several contaminants in the tables, the best-estimate quantities are indicated as "unknown." This means that mention of the contaminant was found in historical data sources, but insufficient information was available for a defensible quantification of the amount. The text fields in CIDRA for the affected waste streams provide the full extent of information compiled for the indicated contaminants.

The tables also give upper and lower bounds on the quantities of the contaminants. Section 5 discusses the statistical methodology used for evaluating the uncertainties in the inventories and for calculating the upper and lower bounds. Section 5 also discusses the major sources of uncertainty, which vary depending on the waste generator.

All inventories in this report are given to only two significant digits. Using more significant digits would give an erroneous impression of the accuracy to which the inventories can be estimated.

The task described in this report went beyond the compilation of an inventory based on waste-related records. The task also considered the technical adequacy of the measurement methods by which the data were originally generated. As a result, although many (generally minor) revisions were made to the estimated contaminant quantities in individual waste streams based on technical considerations, major across-the-board revisions were also incorporated. As discussed primarily in Section 5, these revisions affect many waste streams. The total inventories in Tables 3-1 and 3-2 are, therefore, significantly different from the corresponding quantities reported in RWMIS and in earlier reports. The differences and their bases are discussed in detail in Section 6.

A brief but important explanation is needed about handling radioactive decay products (progeny) in the inventory of radiological contaminants (e.g., in Table 3-2). Because of radioactive decay, the progeny of radionuclides begin forming (growing in) as soon as the parent radionuclides are formed. The relative abundance of the progeny compared with that of the parent depends on the relative half-lives of the parent and progeny and on the time elapsed since production of the parent. For some radionuclides that are often predominant in waste inventories, the half-lives of the progeny are very short compared with those of the parents. Example combinations of parent and progeny are Sr-90 and Y-90, Cs-137 and Ba-137m (metastable), and Ru-106 and Rh-106m. In such cases, radioactive equilibrium (termed secular equilibrium) is established within hours or days between the parent and the progeny. In these circumstances, each curie of the parent radionuclide is in equilibrium with one curie of the progeny (unless branching occurs).

Not all of the preparers of the original shipping and other records included secular equilibrium considerations in the data entries. In the present task, the inventories generally were not adjusted to reflect secular equilibrium. Instead, the adjustment was deferred to the risk assessment. This approach allows easier comparison of the inventory with previous inventory compilations. Adjustments for secular equilibrium will be made before using the inventory in the risk assessment and will be combined with the effort involving complete radioactive decay calculations. The abundance of the progeny will be calculated in computer codes developed for that purpose or in decay models built into environmental transport codes.

Because the progeny have very short half-lives, they exist only as long as the parent radionuclide exists. Therefore, omitting the progeny from the inventory at the time of waste disposal will not affect the inventory of the progeny used in the risk assessment for times longer than a few days or weeks. The equilibrium that is quickly established in producing the progeny will be modeled in the radioactive decay equations.

For easier comparison of the inventory with previous inventory compilations, radionuclides with very short half-lives were not identified. Again, complete calculations of radioactive decay will be performed before using the inventory in the risk assessment.

Although radioactive decay and ingrowth are not factored into this inventory and are deferred for evaluation in the risk assessment, one other nuclear physics consideration is factored into the inventory. The consideration is the relative percentages of U-234, U-235, and U-238 in uranium entries in the inventory. In natural uranium, the relative percentages of these radionuclides by mass are 0.0055 %, 0.72 %, and 99.2745 %, respectively. By radioactivity, the percentages are 48 %, 3 %, and 49 %, respectively. When natural uranium is enriched in the concentration of U-235 for use in nuclear reactors or weapons, in facilities designed for that purpose, the relative proportions of the three radionuclides change considerably. Many of the waste streams in the inventory contain uranium, but the records generally identified only the one or two uranium radionuclides that were predominant by mass. In the present study, a more thorough approach was taken for all waste

streams listed in the records as containing >0.1 Ci of any of the three listed uranium radionuclides. For those waste streams, the degree of enrichment of the uranium (e.g., enrichment corresponding to that of depleted uranium, natural uranium, slightly enriched uranium, or highly enriched uranium) was estimated based on the source and nature of the waste. Standard curves (Rich et al. 1988; EG&G Idaho 1985) were consulted that indicate the relative proportions of the uranium radionuclides for various degrees of enrichment. The appropriate mixture of uranium radionuclides was then ascribed to the uranium in the waste stream, totaling the same amount of uranium as the records indicated.

Some contaminants (e.g., uranium) are not only radioactive, but they also present nonradiological hazards. Such contaminants are listed in this report under only the radiological heading. The nonradiological hazards of materials that are radioactive will be considered in the risk assessment.

As the titles of inventory tables for radiological contaminants indicate, the radioactivity is given at the time of disposal. There is one exception to this convention. For waste stream TRA-670-1H (see Section 2.4.2), the radioactivity is listed as of the time of generation because (a) the radioactivity was calculated by evaluating the generation mechanism and (b) the time of disposal was often many years after the time of generation. For this stream, the data form makes it clear that the primary period of radionuclide generation was 1963 through 1977, and the time of disposal was 1969 through 1977.

The CAS number is given for each nonradiological contaminant in the tables. In some cases, the contaminant listed is a class of contaminants, so a specific CAS number cannot be given.

As Section 1.2 stated, two programs in the 1970s demonstrated the experimental retrieval of part of the waste buried in the SDA. The waste retrieved in those programs has not been subtracted from the CIDRA inventory. Thus, the CIDRA inventory represents what was buried, rather than what remains, in the disposal units of interest. CIDRA is the parent inventory for the SDA waste; special applications of CIDRA are created for risk assessment, with portions of the inventory removed depending on the scope of the application. This approach was judged to provide the greatest flexibility in using the inventory information.

The current inventory is not suitable for direct, immediate use in the risk assessment. As Figure 2-2 indicates, the risk assessor needs to apply additional calculations and judgment before using the inventory values in environmental transport codes and other risk assessment methods. Using the information requires careful consideration of factors such as (a) the physical and chemical characteristics of individual waste streams and of contaminants within a waste stream, (b) waste packaging methods, (c) likely burial methods for the particular type of waste at the particular time, and (d) any migration of contaminants that might have occurred to date. A discussion of this evaluation process is beyond the scope of this report.

3.1.2 Rollup of Nonradiological Contaminants Over All Generators

Table 3-1 lists the nonradiological contaminants identified in the inventory.

Organic liquids are key contaminants, including 1.2E+08 g (120,000 kg) of carbon tetrachloride, 1.1E+08 g (110,000 kg) of 1,1,1-trichloroethane, 1.0E+08 g (100,000 kg) of trichloroethylene, and 2.7E+07 g (27,000 kg) of tetrachloroethylene. There are lesser quantities of methylene chloride and methyl isobutyl ketone. Nitrates are also present in large quantities, including

$1.8E+09$ g (1,800,000 kg) of potassium nitrate, $1.2E+09$ g (1,200,000 kg) of sodium nitrate, and $1.9E+08$ g (190,000 kg) of aluminum nitrate nonahydrate. Among the toxic metals, the largest quantities are $5.8E+08$ g (580,000 kg) of lead, $1.9E+07$ g (19,000 kg) of zirconium, $5.9E+06$ g (5,900 kg) of zirconium alloys, and $1.5E+07$ g (15,000 kg) of beryllium. Acids are abundant, with large quantities of nitric acid and hydrofluoric acid. There are lesser quantities of many other nonradiological contaminants.

Numerous nonradiological contaminants were identified as being present but in unknown quantities. As stated previously, Section 4 documents the attempts to attach estimates to the unknown quantities, even if those estimates are inexact and not defendable.

3.1.3 Rollup of Radiological Contaminants Over All Generators

Table 3-2 lists the radiological contaminants identified in the inventory, which totals an estimated 12 million Ci at the time of disposal. The largest entry is the activation product Fe-55, at 3.8 million Ci. Other predominant activation products include Co-60 at 2.8 million Ci and Ni-63 at 740,000 Ci.

The predominant fission products in Table 3-2 include Cs-137 at 700,000 Ci, Sr-90 at 450,000 Ci, and Ce-144 at 150,000 Ci.

As shown in Table 3-2, actinides (many of which are very long-lived) are present in large quantities. Included are Pu-241 at 400,000 Ci, Am-241 at 150,000 Ci, Pu-239 at 66,000 Ci, and Pu-240 at 15,000 Ci, as well as lesser activities of Pu-238, Cm-242, and U-238.

Another key radionuclide is tritium (H-3), at 1.2 million Ci. The vast majority of the H-3 was generated as an activation product in beryllium, as discussed in Section 2.4.2. Tritium has a half-life of approximately 12 years.

The activities of several of the radionuclides in Table 3-2 were estimated in this study almost exclusively by means of calculations with nuclear physics computer codes. (The calculations either were performed as part of this study or had been performed previously and were extracted from the reports referenced in Section 2.) These radionuclides were frequently not listed on shipping records because their radiation is difficult to detect. The radiation exhibits either weak or no gamma ray and is often absorbed within the waste materials or the container walls. Examples of these radionuclides are H-3, C-14, Sr-90, Tc-99, and I-129. As Section 6.2 shows, the calculated activities of radionuclides of this type are much larger than the corresponding activities indicated in the shipping record compilations of RWMIS.

3.2 Test Area North

3.2.1 Nonradiological Contaminants

Table 3-3 lists the inventory of nonradiological contaminants in the waste from TAN. The predominant contaminant is trimethylolpropane-triester, followed by beryllium.

The minimal reporting of nonradiological contaminants may reflect, in part, the practice at TAN of packaging waste through the TAN-607/633 complex, causing some loss of waste identity. For example, lead was mentioned in RWMIS and the shipping manifests several times without quantitative estimates. These are likely small amounts in solid form that had adsorbed some surface radioactivity.

Large amounts of mercury (> 50 tons) were present at TAN in association with the ANP Program. However, sources such as Hiaring et al. (1991) indicate that the mercury was reclaimed by a commercial contractor. RWMIS, shipping records, and Hiaring et al. (1991) indicate that only a very small amount of mercury from TAN was buried in the SDA.

3.2.2 Radiological Contaminants

Table 3-4 lists the inventory of radiological contaminants in the waste from TAN. The best estimate for the total radioactivity is approximately 35,000 Ci.

About 70% of the radioactivity in Table 3-4 is due to radionuclides of cobalt, manganese, nickel, and iron, which originate in structural materials. These are relatively immobile. About 10% of the radioactivity comes from the fission products Cs-137 and Sr-90. The actinide radionuclides total less than 10 Ci.

Because RWMIS contains no data for TAN before 1960 (the period during which the majority of the ANP Program was conducted), reports, operating logs, and interviews with ANP Program personnel (some of whom are now retired) were used to reconstruct estimates of hazardous and radioactive material in waste shipments from TAN for this period. Reliable curie estimates for TAN for the years 1958 through 1960 were available from AEC annual reports, so reconstruction of the curie values of these early data was feasible. A total of 9,000 Ci were added to the inventory for the years 1956 through 1959, years not included in RWMIS. The distribution of radionuclides for this radioactivity was calculated based on reported operations using a nuclear physics computer code and engineering judgment.

For the years 1960 through 1970, the radionuclide distributions were calculated and distributed for the two categories by combining data provided in reports and engineering judgment according to projects that were performed during that period. The RWMIS yearly curie values were corroborated with waste shipping papers to verify values. After 1970, the radionuclides were distributed by the method described in Section 2.4.1; the amount of H-3 was reduced to reflect the operations conducted at TAN during this period.

3.3 Test Reactor Area

3.3.1 Nonradiological Contaminants

Table 3-5 lists the inventory of nonradiological contaminants in the waste from TRA. The largest contributors are lead and beryllium. The beryllium represents the total mass of the beryllium reflectors removed from MTR, ETR, and ATR. There are also substantial quantities of cadmium and asbestos.

Other than the contaminants listed above, few nonradiological contaminants from TRA were identified. Some additional nonradiological contaminants may have been included in the waste, but they are difficult to confirm. One example involves the MTR and ETR cooling towers. The cooling water that passed through these wooden towers contained a chromate-based fungicide. The fungicide may have been absorbed into the wood and subsequently buried with the wood at the RWMC, but this could not be confirmed. Another example is organic solvents, such as carbon tetrachloride. There have been reports of such contaminants in the TRA waste sent to the RWMC. However, the reports could not be confirmed based on discussions with TRA personnel who were involved with operations at the time period of interest.

Very few liquids from TRA were disposed of at the RWMC. The liquids were usually transferred to ICPP for treatment or to the disposal ponds at TRA.

3.3.2 Radiological Contaminants

Table 3-6 lists the inventory of radiological contaminants in the waste from TRA. The waste from TRA contained more total radioactivity (6.6 million Ci) than the waste from any other generator that shipped to the SDA.

The dominant radionuclide in the TRA waste is Fe-55 at 2.7 million Ci.

Another major contributor is H-3 at 1.2 million Ci. Tritium was an activation product formed in the beryllium reflectors in the reactor cores. Tritium was also formed as a fission product of ternary fission. The half-life of H-3 is approximately 12 years. The total mass of the H-3 in the inventory is approximately 125 g.

Other major contributors are the activation products Co-60, Cr-51, and Ni-63, and the fission products Cs-137 and Sr-90. The dominant radionuclides in the TRA waste are what would generally be expected based on the reactor operations that generated the waste.

TRA is the principal generator of three radionuclides: C-14, I-129, and Tc-99. These radionuclides are of particular interest because of their very long half-lives and their relatively high mobilities in groundwater once released from confinement, even though their activities are not extremely large. As discussed in Section 2.4.2, the estimated activities of these three radionuclides are based primarily on (a) nuclear physics calculations performed for the current task and (b) Tables 2-7 through 2-10, which in turn derive from calculations and laboratory data obtained at the INEL and at the Electric Power Research Institute (EPRI) (see Harker 1995a and 1995b). The activities are considerably higher than those listed in the shipping records for these three radionuclides, because they are very difficult to measure. There is considerable uncertainty in the present estimates.

3.4 Idaho Chemical Processing Plant

3.4.1 Nonradiological Contaminants

Table 3-7 lists the inventory of nonradiological contaminants in the waste from ICPP.

In the 1950s, liquid waste containing chemicals, some of which are now classified as hazardous substances, was disposed of in a special pit located outside the RWMC. The chemicals contained in this waste are included in Table 3-7. Subsequent enlargement of the RWMC area incorporated this liquid disposal area within the RWMC boundaries, and the disposal of liquids at the RWMC was discontinued. Only very small quantities of radionuclides were contained in this liquid waste. The waste originated primarily from "cold runs" of processes being tested for use in the ICPP process building for the recovery of uranium. The major chemicals in the liquid waste are aluminum nitrate nonahydrate, nitric acid, hydrofluoric acid, sodium nitrate, mercury nitrate monohydrate, and uranyl nitrate. As listed in Table 3-7, smaller quantities of other chemicals were also disposed of. Large quantities of lime were added to the pit to neutralize the acid.

In addition to the aqueous waste, some organic liquids were discharged to a special pit at the RWMC. The major contaminants are methyl isobutyl ketone and tributyl phosphate.

In addition to the contaminants in the liquid waste, a large amount of lead (about 26,000 kg), in the form of lead bricks or lead sheets, was disposed of at the SDA. A large quantity of zirconium scrap left over from developing a process for extracting uranium from zirconium/uranium fuel was also disposed of. A small amount of asbestos in the form of pipe insulation, as well as small amounts of other contaminants, were also buried as listed in Table 3-7.

3.4.2 Radiological Contaminants

Table 3-8 lists the inventory of radiological contaminants in the waste from ICPP. The total radioactivity is approximately 690,000 Ci. The dominant contributors are the activation products Co-60, Co-58, Cr-51, and Mn-54 and the fission products Cs-137, Ce-144, and Pr-144.

ICPP received highly enriched fuel routinely from the reactors at TRA, NRF, and EBR-II and intermittently from several other test reactors. This fuel was stored under water, the nonfuel-containing end boxes were cut off if necessary, and the fuel was processed. Millions of curies of radionuclides were separated from the uranium during processing, but only 690,000 Ci of this total is estimated to have ended up in process waste or fuel end boxes disposed of at the RWMC during the period 1952 through 1983. The remainder was retained as liquid high-level waste stored at ICPP in underground stainless-steel tanks. This liquid waste was eventually processed in the Waste Calcining Facility and stored in underground stainless-steel bins at ICPP as granular solid high-level waste.

Approximately 500,000 Ci was associated with the constituents of the fuel end boxes. The end boxes were cut off from the fuel assemblies before processing the fuel and were transported directly to the RWMC. The radionuclides in the end boxes were primarily short-lived, gamma-emitting activation products. The radionuclide Co-60 provides the greatest amount of radiation, with a half-life of approximately 5 years. The radionuclides in the end boxes are an integral part of the stainless-steel metal. No uranium or fission products were contained in the end boxes. The large quantities of activation products, such as Co-60, are to be expected because of the irradiation of the fuel in the EBR-II reactor.

Another 25,000 Ci of the radionuclide inventory is associated with the sludge from the fuel storage building. The sludge contains radionuclides with long half-lives, such as Cs-137 and Sr-90.

3.5 Naval Reactors Facility

3.5.1 Nonradiological Contaminants

Table 3-9 lists the inventories of nonradiological contaminants in the NRF-generated waste that was buried in the SDA. Only four nonradiological contaminants were identified in the search of information sources. Approximately 5,900 kg of zirconium alloy (zircaloy) has been sent from NRF for burial at the SDA. Some of the zirconium is in the form of small chips and saw fines. Zirconium and its alloys are pyrophoric, especially when finely divided. The presence of these alloys mixed with the other waste requires careful handling to avoid fires if exposed to the air.

Small quantities of an acid, possibly hydrofluoric acid, with dissolved fuel rods were absorbed in vermiculite and placed in polyethylene bottles. The records do not show the quantity of acid shipped from NRF; the records only show the curies of activity involved. The amount of acid is likely to be minor.

Unknown quantities of lead and asbestos were also present in the NRF waste. Although probably substantial, the quantities of these two contaminants are believed to be smaller than the quantities from other generators who shipped waste to the RWMC.

3.5.2 Radiological Contaminants

The best estimate for the total quantity of radioactive material shipped from NRF to the RWMC from 1952 through 1983 is approximately 2.9 million Ci. The distribution of that total among the principal radionuclides is shown in Table 3-10.

The majority of the activity listed is Co-60, with an approximately 5-year half-life, and Fe-55, with a half-life of approximately 2.7 years. The list includes 220,000 Ci of Ni-63, with a half-life of 100 years, and 140,000 Ci each of Sr-90 and Cs-137, both with approximately 30-year half-lives. Most of the other major contributors—Sb-125, Zr-95, Sn-119m and Co-58m—have half-lives ranging from a few months to a few years.

One conclusion of this investigation is that the majority of the radioactivity transferred from NRF for burial at the RWMC is in the form of solid, monolithic pieces of activated metal (core structural materials). In addition, significant fractions of the activity were short-lived radionuclides, and much of that has decayed since burial. There remains a considerable amount of long-lived radionuclides, principally Co-60, Ni-63, Sr-90, and Cs-137. Of these, the activation products Co-60 and Ni-63 are immobilized in large pieces of stainless steel. However, the probable principal hazards two or three decades after burial, Sr-90 and Cs-137, are *not* immobile. The Sr-90 and Cs-137 assumed for this waste must be considered to be in particulate form and probably soluble.

The radionuclides listed and their quantities are what would be expected in the waste from a facility such as NRF. The reactors would generate large volumes of compactible waste with small concentrations of activated metals. The ECF would generate large quantities of activated metals associated with core structural materials, some fission products resulting from examination of fuel samples, and large quantities of zirconium alloy scrap from the fuel elements. The sludges are typical for facilities that have a need to maintain water purity and clarity.

3.6 Argonne National Laboratory-West

3.6.1 Nonradiological Contaminants

Table 3-11 lists the inventory of nonradiological contaminants in the waste from ANL-W.

Lead and small quantities of chloroform, aqua regia, and carbon tetrachloride were the only nonradiological contaminants identified and quantified in the waste. Small quantities of chromium and cadmium are also believed to have been disposed of; however, the quantities are unknown. The quantity of asbestos is also unknown. Radiologically contaminated aerosol cans, paint containers, solvent-wet rags, or other small items probably made their way into ANL-W waste streams. However, any toxic materials in these waste shipments could not be identified and are assumed to be very small.

3.6.2 Radiological Contaminants

Table 3-12 lists the inventory of radiological contaminants in the waste from ANL-W. The total radioactivity is approximately 1.1 million Ci.

The largest contributor to the activity (about 330,000 Ci) is Co-60, with a half-life of approximately 5 years. The next largest contributor is Sr-90 (220,000 Ci). Other key radionuclides are Cs-137, Cr-51, Ce-144, and Mn-54. Plutonium and uranium radionuclides with very long half-lives are present in small amounts.

3.7 Rocky Flats Plant

3.7.1 Nonradiological Contaminants

Table 3-13 lists the inventory of nonradiological contaminants in waste from the RFP.

The largest nonradiological contributors are lead (which is present in leaded rubber gloves and aprons and as pieces of lead sheeting used for shielding); nitrates; and several volatile organic compounds (VOCs): carbon tetrachloride, 1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene. The estimated quantities of the VOCs are expected to be conservatively high because of unknown losses to evaporation before the waste was packaged and shipped. The conservative estimates are used as upper bounds, and the best estimates of the amount buried are taken to be three-fourths of the upper bounds. The sodium and potassium nitrate are present in evaporator salts, which contain small quantities of plutonium.

3.7.2 Radiological Contaminants

Table 3-14 lists the inventory of radiological contaminants in waste from the RFP. The total radioactivity is approximately 620,000 Ci.

The largest contributor to the radioactivity is Pu-241 (390,000 Ci), which has a half-life of about 14 years and decays to Am-241. Americium-241, Pu-239, and Pu-240 make up most of the balance of the radioactivity. These three radionuclides have long half-lives that range from approximately 430 to 24,000 years. Although the activities of U-235 and U-238 are rather small, these nuclides are present in very large quantities in terms of mass because of their low specific activity.

The plutonium and americium radionuclides and the depleted uranium reached a peak annual disposal quantity around 1966. The enriched uranium reached a peak disposal rate around 1960.

3.8 Other Generators and Waste Disposed of on Pad A

Inventories are reported based on the 10 major categories^e of other generators. Those categories are offsite generators (OFF) not otherwise specified; Argonne National Laboratory-East (ALE); Auxiliary Reactor Area (ARA), including SL-1; Battelle Northwest Laboratories (BNL); Central Facilities Area (CFA); decontamination and decommissioning projects (D&D); Loss of Fluid Test Reactor facility (LOF); Power Excursion Reactor/Power Burst Facility (PER); Waste Management Complex (WMC); and waste disposed of on Pad A, regardless of the generator (see Section 2.4.8).

e. For consistency, the acronyms used in Section 3.8 for the miscellaneous generators are those used in RWMIS. They may differ from the acronyms conventionally used at the INEL and elsewhere in this report.

3.8.1 Nonradiological Contaminants

Tables 3-15 through 3-18 list the inventories of nonradiological contaminants generated in waste from the other generators. Nonradiological contaminants were identified and quantified for only 4 of the 10 generators: CFA, OFF, PER, and waste on Pad A. The nonradiological contaminants from these four generators and the remaining other generators are discussed below.

Based on available reports and interviews, quantifiable nonradiological contaminants were not identified in the waste streams from ALE, ARA, BNL, D&D, LOF, or WMC.

The majority of the CFA nonradiological contaminants were reported to have been disposed of primarily in the CFA landfill, percolation ponds, sewage drain fields, and french drains. Of the reported nonradiological contaminants in Table 3-15, all contaminants were estimates based on information obtained from shipping records. The largest contaminants in mass are lead, sodium-potassium, and zirconium. Cyanide and mercury are listed as "unknown" because there is a mention of these contaminants in RWMIS, but no verification of the quantities could be located. The sodium-potassium listing is from cleanup of EBR-I and is reported to have been reacted with water in a strongly basic solution (NaOH/KOH); the solution was solidified by evaporation and cooling and was disposed of as a solid waste.

The OFF nonradiological contaminants listed in Table 3-16 were obtained from Clements (1980) and shipping records. The largest contaminants in mass are lead and magnesium. The chemicals listed in which the quantities or volumes are unknown are based on the following considerations:

- Generators reported that these contaminants were possible in their waste streams, but quantities were minute
- These contaminants were typically in the waste streams, but the nonradiological constituents were shipped elsewhere for disposal
- It was questionable if these contaminants were included in the waste disposed of at the RWMC.

Based on the uncertainties described, defendable estimates of the quantities of these contaminants could not be made.

The PER nonradiological contaminants listed in Table 3-17 represent the best estimates derived from numerous interviews and the data gatherer's process knowledge of the facility. The largest contaminants in mass are lead, trichloroethylene, and xylene.

The lead listed in Tables 3-15 through 3-17 was typically in the form of shielding. Liquid organic contaminants, such as formaldehyde, toluene, acetone, and trichloroethene, were reported to have been solidified before disposal or are generally included as absorbed liquids on paper or cloth used in cleanup activities. Acidic liquid waste—sulfuric acid, nitric acid, and hydrogen fluoride—is believed to have been disposed of in the Acid Pit as liquid waste and neutralized in the pit with the addition of lime. Metals such as zirconium, magnesium, beryllium, and cadmium were generated from a wide variety of processes and account for only a small percentage of the total mass of nonradiological contaminants.

The nonradiological contaminants disposed of on Pad A are listed in Table 3-18. The contaminants identified and quantified are all large quantities of sodium and potassium salts (chlorides, nitrates, and sulfates) from the RFP.

From 1980 through 1983, lead is the only nonradiological contaminant listed in ALE shipments and is reported as negligible. It is unlikely that other nonradiological contaminants were included in shipments from ALE during the 1980s.

Based on interviews and on the EG&G Idaho (1986), all nonradiological contaminants included in the waste streams from ARA were disposed of either at ARA or processed through ICPP. The chemical leach field at ARA-I, leach fields at ARA-III, septic tanks at ARA-III, the CFA landfill, and ICPP were reported to have received all of the nonradiological contaminants generated at this facility. Rags with an undetermined absorbed volume of cleaning fluid may have been shipped from ARA to the RWMC.

BNL contributed a very small volume of waste to the SDA in 1983. Because only 4.655 m³ (164.3 ft³) of BNL waste was disposed of and based on the results of interviews, nonradiological contaminants are not suspected in the BNL waste stream.

D&D projects did not dispose of nonradiological waste at the RWMC, with the possible exception of asbestos pipe insulation, copper, and sodium. Conducting interviews and reviewing numerous reports could not provide defendable quantitative information on these contaminants.

Reports and process information were used to determine the extent of nonradiological contaminants disposed of from LOF. No information was available to indicate that these contaminants were included in the waste streams from LOF.

WMC waste was disposed of from 1977 through 1983. Based on interviews, the types of waste disposed, and process information, nonradiological contaminants are not suspected in the waste stream.

3.8.2 Radiological Contaminants

Tables 3-19 through 3-28 list the inventories of radiological contaminants in waste from the other generators.

The total activity of radioactive material from all other generators is approximately 49,000 Ci. Of that total, approximately one-half is Cs-137, and the remainder is mostly H-3, Sr-90, and the activation products Co-60 and Fe-59.

Actinides represent only a very small percentage of the total activity. The waste on Pad A (Table 3-28) contains a large quantity of depleted uranium (primarily U-238) and a small quantity of plutonium. Much of the remaining activity is represented by radionuclides with short half-lives, such as Zr-95, received primarily from offsite generators involved in isotope research.

Because most of the disposal records evaluated for the radionuclide type listed only MFP, much of the Cs-137 and Sr-90 activity was derived by converting disposal record listings of MFP to the appropriate radionuclides. The H-3 was received primarily from D&D of the S1G reactor vessel and from the University of California, Lawrence Radiation Laboratories. The Co-60 and Fe-59 were derived primarily from converting MAP listed on disposal records into the respective radionuclides.

Table 3-1a. Inventory of nonradiological contaminants (listed by quantity) from all generators.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7757-79-1	Potassium nitrate	1.8E+09	1.3E+09	2.4E+09
7631-99-4	Sodium nitrate	1.2E+09	8.4E+08	1.6E+09
7439-92-1	Lead	5.8E+08	4.9E+08	6.8E+08
7784-27-2	Aluminum nitrate nonahydrate	1.9E+08	1.5E+08	2.4E+08
7757-82-6	Sodium sulfate	1.6E+08	1.2E+08	2.1E+08
7647-14-5	Sodium chloride	1.6E+08	1.2E+08	2.1E+08
56-23-5	Carbon tetrachloride	1.2E+08	1.1E+08	1.4E+08
71-55-6	1,1,1-trichloroethane	1.1E+08	9.5E+07	1.2E+08
79-01-6	Trichloroethylene	1.0E+08	9.1E+07	1.2E+08
7778-80-5	Potassium sulfate	8.0E+07	5.9E+07	1.1E+08
7447-40-7	Potassium chloride	8.0E+07	5.9E+07	1.1E+08
10101-89-0	Sodium phosphate	8.0E+07	5.9E+07	1.1E+08
7697-37-2	Nitric acid	5.0E+07	3.9E+07	6.2E+07
7778-77-0	Potassium phosphate	4.0E+07	3.0E+07	5.4E+07
127-18-4	Tetrachloroethylene	2.7E+07	2.3E+07	3.1E+07
7440-67-7	Zirconium	1.9E+07	1.6E+07	2.3E+07
7440-41-7	Beryllium	1.5E+07	1.4E+07	1.6E+07
75-09-2	Methylene chloride	1.4E+07	1.4E+07	1.5E+07
76131	1,1,2-trichloro-1,2,2-trifluoroethane	9.1E+06	8.5E+06	9.8E+06
7439-95-4	Magnesium	9.0E+06	7.4E+06	1.1E+07
108-10-1	Methyl isobutyl ketone	8.9E+06	7.0E+06	1.1E+07
7664393	Hydrofluoric acid	7.6E+06	6.0E+06	9.6E+06
—	Zirconium alloys	5.9E+06	4.7E+06	7.3E+06
10588-01-9	Sodium dichromate	4.1E+06	3.0E+06	5.4E+06
7778-50-9	Potassium dichromate	2.3E+06	1.7E+06	3.0E+06
11135-81-2	Sodium potassium	1.7E+06	1.2E+06	2.4E+06
7440-43-9	Cadmium	1.6E+06	9.2E+05	2.5E+06
1332-21-4	Asbestos	1.2E+06	4.7E+05	2.6E+06
15625-89-5	Trimethylopropane-triester	1.2E+06	8.4E+05	1.6E+06

Table 3-1a. (continued).

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
126-73-8	Tributyl phosphate	1.0E+06	7.8E+05	1.3E+06
1330-20-7	Xylene	8.5E+05	7.2E+05	1.0E+06
7783-34-8	Mercury nitrate monohydrate	8.1E+05	6.3E+05	1.0E+06
7664417	Ammonia	7.8E+05	2.7E+05	1.8E+06
7790-86-5	Cerium chloride	5.1E+05	4.2E+05	6.2E+05
26140-60-3	Terphenyl	4.5E+05	1.6E+05	1.0E+06
67-56-1	Methyl alcohol	2.2E+05	2.0E+05	2.5E+05
10102064	Uranyl nitrate	2.2E+05	1.7E+05	2.8E+05
108-88-3	Toluene	1.9E+05	1.3E+05	2.6E+05
50-00-0	Formaldehyde	1.4E+05	1.3E+05	1.5E+05
7783-40-6	Magnesium fluoride	1.4E+05	1.3E+05	1.4E+05
7664-93-9	Sulfuric acid	1.2E+05	9.9E+04	1.5E+05
67-64-1	Acetone	1.1E+05	9.8E+04	1.3E+05
71363	Butyl alcohol	9.9E+04	9.0E+04	1.1E+05
7440-23-5	Sodium	6.8E+04	6.1E+04	7.5E+04
78-93-3	2-butanone	3.2E+04	2.5E+04	4.0E+04
64175	Ethyl alcohol	2.2E+04	1.8E+04	2.8E+04
7440-22-4	Silver	5.9E+03	4.7E+03	7.3E+03
8032-32-4	Benzine	4.0E+03	3.3E+03	4.8E+03
7440-02-0	Nickel	2.2E+03	1.0E+03	4.1E+03
302012	Hydrazine	1.8E+03	1.3E+03	2.3E+03
7440-47-3	Chromium	1.0E+03	6.8E+02	1.5E+03
143-33-9	Sodium cyanide	9.4E+02	3.2E+02	2.2E+03
7440-36-0	Antimony	4.5E+02	1.6E+02	1.0E+03
3251-23-8	Copper nitrate	3.3E+02	2.6E+02	4.1E+02
120-12-7	Anthracene	2.0E+02	7.0E+01	4.6E+02
1310-73-2	Sodium hydroxide	1.5E+02	5.1E+01	3.4E+02
67-66-3	Chloroform	3.7E+01	3.6E+01	3.7E+01
—	Aqua regia	3.1E+01	3.0E+01	3.2E+01

Table 3-1a. (continued).

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
—	Organophosphates	Unknown	NA ^b	NA
—	Versenes	Unknown	NA	NA
—	Organic acids	Unknown	NA	NA
—	Nitrocellulose	Unknown	NA	NA
—	Dibutylethylcarbutol	Unknown	NA	NA
—	Cyanide	Unknown	NA	NA
—	Alcohols	Unknown	NA	NA
7580-67-8	Lithium hydride	Unknown	NA	NA
7440-50-8	Copper	Unknown	NA	NA
7439-97-6	Mercury	Unknown	NA	NA
7439-96-5	Manganese	Unknown	NA	NA
71-43-2	Benzene	Unknown	NA	NA
60-29-7	Ether	Unknown	NA	NA
56-49-5	3-methylcholanthrene	Unknown	NA	NA
55914	Diisopropylfluorophosphate	Unknown	NA	NA
4165-60-0	Nitrobenzene	Unknown	NA	NA
1806-34-4	1,4-bis(5-phenyloxazol-2-YL)benzene	Unknown	NA	NA
1336363	PCB	Unknown	NA	NA
1309-48-4	Magnesium oxide	Unknown	NA	NA
1304-56-9	Beryllium oxide	Unknown	NA	NA
12057-24-8	Lithium oxide	Unknown	NA	NA

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-1b. Inventory of nonradiological contaminants (listed alphabetically) from all generators.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
71-55-6	1,1,1-trichloroethane	1.1E+08	9.5E+07	1.2E+08
76131	1,1,2-trichloro-1,2,2-trifluoroethane	9.1E+06	8.5E+06	9.8E+06
1806-34-4	1,4-bis(5-phenyloxazol-2-YL)benzene	Unknown	NA ^b	NA
78-93-3	2-butanone	3.2E+04	2.5E+04	4.0E+04
56-49-5	3-methylcholanthrene	Unknown	NA	NA
67-64-1	Acetone	1.1E+05	9.8E+04	1.3E+05
—	Alcohols	Unknown	NA	NA
7784-27-2	Aluminum nitrate nonahydrate	1.9E+08	1.5E+08	2.4E+08
7664417	Ammonia	7.8E+05	2.7E+05	1.8E+06
120-12-7	Anthracene	2.0E+02	7.0E+01	4.6E+02
7440-36-0	Antimony	4.5E+02	1.6E+02	1.0E+03
—	Aqua regia	3.1E+01	3.0E+01	3.2E+01
1332-21-4	Asbestos	1.2E+06	4.7E+05	2.6E+06
71-43-2	Benzene	Unknown	NA	NA
8032-32-4	Benzine	4.0E+03	3.3E+03	4.8E+03
7440-41-7	Beryllium	1.5E+07	1.4E+07	1.6E+07
1304-56-9	Beryllium oxide	Unknown	NA	NA
71363	Butyl alcohol	9.9E+04	9.0E+04	1.1E+05
7440-43-9	Cadmium	1.6E+06	9.2E+05	2.5E+06
56-23-5	Carbon tetrachloride	1.2E+08	1.1E+08	1.4E+08
7790-86-5	Cerium chloride	5.1E+05	4.2E+05	6.2E+05
67-66-3	Chloroform	3.7E+01	3.6E+01	3.7E+01
7440-47-3	Chromium	1.0E+03	6.8E+02	1.5E+03
7440-50-8	Copper	Unknown	NA	NA
3251-23-8	Copper nitrate	3.3E+02	2.6E+02	4.1E+02
—	Cyanide	Unknown	NA	NA
—	Dibutylethylcarbutol	Unknown	NA	NA
55914	Diisopropylfluorophosphate	Unknown	NA	NA
60-29-7	Ether	Unknown	NA	NA

Table 3-1b. (continued).

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
64175	Ethyl alcohol	2.2E+04	1.8E+04	2.8E+04
50-00-0	Formaldehyde	1.4E+05	1.3E+05	1.5E+05
302012	Hydrazine	1.8E+03	1.3E+03	2.3E+03
7664393	Hydrofluoric acid	7.6E+06	6.0E+06	9.6E+06
7439-92-1	Lead	5.8E+08	4.9E+08	6.8E+08
7580-67-8	Lithium hydride	Unknown	NA	NA
12057-24-8	Lithium oxide	Unknown	NA	NA
7439-95-4	Magnesium	9.0E+06	7.4E+06	1.1E+07
7783-40-6	Magnesium fluoride	1.4E+05	1.3E+05	1.4E+05
1309-48-4	Magnesium oxide	Unknown	NA	NA
7439-96-5	Manganese	Unknown	NA	NA
7439-97-6	Mercury	Unknown	NA	NA
7783-34-8	Mercury nitrate monohydrate	8.1E+05	6.3E+05	1.0E+06
67-56-1	Methyl alcohol	2.2E+05	2.0E+05	2.5E+05
108-10-1	Methyl isobutyl ketone	8.9E+06	7.0E+06	1.1E+07
75-09-2	Methylene chloride	1.4E+07	1.4E+07	1.5E+07
7440-02-0	Nickel	2.2E+03	1.0E+03	4.1E+03
7697-37-2	Nitric acid	5.0E+07	3.9E+07	6.2E+07
4165-60-0	Nitrobenzene	Unknown	NA	NA
—	Nitrocellulose	Unknown	NA	NA
—	Organic acids	Unknown	NA	NA
—	Organophosphates	Unknown	NA	NA
1336363	PCB	Unknown	NA	NA
7447-40-7	Potassium chloride	8.0E+07	5.9E+07	1.1E+08
7778-50-9	Potassium dichromate	2.3E+06	1.7E+06	3.0E+06
7757-79-1	Potassium nitrate	1.8E+09	1.3E+09	2.4E+09
7778-77-0	Potassium phosphate	4.0E+07	3.0E+07	5.4E+07
7778-80-5	Potassium sulfate	8.0E+07	5.9E+07	1.1E+08
7440-22-4	Silver	5.9E+03	4.7E+03	7.3E+03

Table 3-1b. (continued).

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7440-23-5	Sodium	6.8E+04	6.1E+04	7.5E+04
7647-14-5	Sodium chloride	1.6E+08	1.2E+08	2.1E+08
143-33-9	Sodium cyanide	9.4E+02	3.2E+02	2.2E+03
10588-01-9	Sodium dichromate	4.1E+06	3.0E+06	5.4E+06
1310-73-2	Sodium hydroxide	1.5E+02	5.1E+01	3.4E+02
7631-99-4	Sodium nitrate	1.2E+09	8.4E+08	1.6E+09
10101-89-0	Sodium phosphate	8.0E+07	5.9E+07	1.1E+08
11135-81-2	Sodium potassium	1.7E+06	1.2E+06	2.4E+06
7757-82-6	Sodium sulfate	1.6E+08	1.2E+08	2.1E+08
7664-93-9	Sulfuric acid	1.2E+05	9.9E+04	1.5E+05
26140-60-3	Terphenyl	4.5E+05	1.6E+05	1.0E+06
127-18-4	Tetrachloroethylene	2.7E+07	2.3E+07	3.1E+07
108-88-3	Toluene	1.9E+05	1.3E+05	2.6E+05
126-73-8	Tributyl phosphate	1.0E+06	7.8E+05	1.3E+06
79-01-6	Trichloroethylene	1.0E+08	9.1E+07	1.2E+08
15625-89-5	Trimethylolpropane-triester	1.2E+06	8.4E+05	1.6E+06
10102064	Uranyl nitrate	2.2E+05	1.7E+05	2.8E+05
—	Versenes	Unknown	NA	NA
1330-20-7	Xylene	8.5E+05	7.2E+05	1.0E+06
7440-67-7	Zirconium	1.9E+07	1.6E+07	2.3E+07
—	Zirconium alloys	5.9E+06	4.7E+06	7.3E+06

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-2a. Inventory of radiological contaminants (listed by quantity) from all generators (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Fe-55	3.8E+06	31.5	2.2E+06	6.0E+06
Co-60	2.8E+06	23.8	2.2E+06	3.7E+06
H-3	1.2E+06	9.8	7.5E+05	1.8E+06
Ni-63	7.4E+05	6.2	4.7E+05	1.1E+06
Cr-51	7.3E+05	6.1	1.6E+04	4.5E+06
Cs-137	7.0E+05	5.8	4.9E+05	9.5E+05
Sr-90	4.5E+05	3.8	1.0E+05	1.3E+06
Pu-241	4.0E+05	3.3	2.9E+05	5.4E+05
Mn-54	1.8E+05	1.5	3.7E+04	5.4E+05
Co-58	1.6E+05	1.3	4.7E+04	4.0E+05
Ce-144	1.5E+05	1.3	2.6E+04	5.2E+05
Am-241	1.5E+05	1.3	1.1E+05	2.0E+05
Sb-125	1.3E+05	1.1	1.1E+05	1.4E+05
Fe-59	9.1E+04	0.8	2.0E+03	5.6E+05
Zr-95	7.6E+04	0.6	7.0E+04	8.2E+04
Pu-239	6.6E+04	0.5	4.7E+04	8.9E+04
Pr-144	4.2E+04	0.4	3.2E+03	1.9E+05
Sn-119m	2.7E+04	0.2	2.5E+04	3.0E+04
Y-90	1.9E+04	0.2	1.8E+03	8.2E+04
C-14	1.6E+04	0.1	7.8E+02	8.5E+04
Pu-240	1.5E+04	0.1	1.0E+04	2.2E+04
Eu-155	1.5E+04	0.1	7.9E+02	7.6E+04
Ru-106	6.8E+03	<0.05	5.0E+03	9.0E+03
Rh-106	6.8E+03	<0.05	5.0E+03	9.0E+03
Ni-59	5.1E+03	<0.05	2.4E+02	2.7E+04
Eu-154	3.0E+03	<0.05	8.8E+01	1.7E+04
Pu-238	2.5E+03	<0.05	4.3E+02	8.6E+03
Nb-95	2.4E+03	<0.05	1.4E+03	3.9E+03
Cs-134	2.2E+03	<0.05	3.7E+02	7.4E+03

Table 3-2a. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Sb-124	1.8E+03	<0.05	1.0E+01	1.3E+04
La-140	7.7E+02	<0.05	3.2E+01	4.2E+03
Ce-141	7.6E+02	<0.05	3.7E+01	4.0E+03
Ba-140	6.6E+02	<0.05	2.8E+01	3.6E+03
Pr-143	6.2E+02	<0.05	2.1E+01	3.6E+03
Y-91	5.3E+02	<0.05	2.2E+01	2.9E+03
Sr-89	4.7E+02	<0.05	2.0E+01	2.6E+03
Zn-65	3.6E+02	<0.05	3.8E+00	2.5E+03
Ru-103	3.6E+02	<0.05	1.5E+01	1.9E+03
Rh-103m	2.7E+02	<0.05	9.2E+00	1.5E+03
Tc-99	2.6E+02	<0.05	1.2E+01	1.4E+03
Eu-152	2.4E+02	<0.05	2.1E+02	2.6E+02
U-238	1.1E+02	<0.05	7.0E+01	1.8E+02
Cm-242	9.1E+01	<0.05	1.2E+01	3.4E+02
Pm-147	8.1E+01	<0.05	9.6E-01	5.5E+02
Cm-244	8.0E+01	<0.05	4.9E+00	4.0E+02
Po-210	7.5E+01	<0.05	1.4E+00	4.8E+02
U-234	6.4E+01	<0.05	5.0E+01	8.2E+01
Ra-226	5.9E+01	<0.05	4.4E+01	7.6E+01
Ir-192	5.4E+01	<0.05	1.4E+00	3.2E+02
Sc-46	5.3E+01	<0.05	2.9E-01	3.8E+02
Nb-94	4.9E+01	<0.05	2.5E+01	8.8E+01
Be-10	4.3E+01	<0.05	2.9E-01	3.1E+02
Mn-56	2.7E+01	<0.05	1.6E-01	2.0E+02
Ta-182	8.5E+00	<0.05	3.5E-01	4.6E+01
U-232	8.4E+00	<0.05	6.8E+00	1.0E+01
Rb-86	7.1E+00	<0.05	1.1E-01	4.6E+01
U-235	5.1E+00	<0.05	4.2E+00	6.0E+00
Co-57	4.8E+00	<0.05	9.6E-02	3.0E+01

Table 3-2a. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Zr-93	4.0E+00	<0.05	2.4E+00	6.4E+00
Tm-170	3.4E+00	<0.05	1.6E-02	2.4E+01
Ba-137m	3.4E+00	<0.05	1.6E-02	2.4E+01
U-236	2.5E+00	<0.05	1.9E+00	3.3E+00
Np-237	2.4E+00	<0.05	1.7E-01	1.1E+01
I-131	1.5E+00	<0.05	8.2E-03	1.1E+01
Th-232	1.3E+00	<0.05	1.1E+00	1.6E+00
Kr-85	1.3E+00	<0.05	6.2E-03	9.5E+00
U-233	1.1E+00	<0.05	7.8E-01	1.6E+00
Mo-99	1.0E+00	<0.05	1.5E-02	6.6E+00
Pu-242	9.9E-01	<0.05	7.3E-01	1.3E+00
Ag-110	8.4E-01	<0.05	4.6E-03	6.1E+00
Cs-136	7.7E-01	<0.05	2.6E-02	4.4E+00
Cd-109	4.1E-01	<0.05	1.1E-02	2.5E+00
Hf-181	3.6E-01	<0.05	3.0E-03	2.6E+00
Be-7	3.5E-01	<0.05	7.1E-03	2.2E+00
Cl-36	3.1E-01	<0.05	3.1E-03	2.2E+00
Na-22	3.0E-01	<0.05	5.4E-03	2.0E+00
Am-243	2.3E-01	<0.05	2.4E-03	1.6E+00
I-129	9.9E-02	<0.05	6.2E-03	4.8E-01
P-32	9.2E-02	<0.05	1.4E-03	6.1E-01
S-35	8.8E-02	<0.05	1.6E-03	5.6E-01
I-133	5.0E-02	<0.05	2.5E-04	3.6E-01
Sr-85	2.9E-02	<0.05	1.5E-04	2.1E-01
I-125	2.9E-02	<0.05	5.9E-04	1.8E-01
Y-88	2.5E-02	<0.05	5.0E-04	1.6E-01
Sc-44	2.5E-02	<0.05	5.0E-04	1.6E-01
Th-230	1.8E-02	<0.05	1.4E-02	2.2E-02
Hg-203	1.2E-02	<0.05	5.8E-05	8.7E-02

Table 3-2a. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Cf-252	1.0E-02	< 0.05	9.8E-05	6.9E-02
Am-242	7.6E-03	< 0.05	4.0E-05	5.5E-02
Yb-164	7.6E-03	< 0.05	7.4E-05	5.3E-02
Er-169	7.6E-03	< 0.05	7.4E-05	5.3E-02
Mn-53	1.0E-03	< 0.05	2.0E-05	6.3E-03
Tl-204	6.7E-04	< 0.05	3.2E-06	4.8E-03
Ca-45	6.7E-04	< 0.05	3.2E-06	4.8E-03
Ba-133	5.4E-04	< 0.05	2.8E-06	3.9E-03
Pb-212	2.0E-05	< 0.05	4.0E-07	1.3E-04
Pb-210	9.1E-06	< 0.05	1.8E-07	5.7E-05
Ra-225	2.0E-06	< 0.05	1.5E-06	2.5E-06
Rn-222	1.0E-06	< 0.05	2.0E-08	6.3E-06
Cd-104	1.5E-07	< 0.05	3.0E-09	9.5E-07
Total	1.2E+07	99.8 ^a		

a. Total in table does not equal 100.0% due to rounding.

Table 3-2b. Inventory of radiological contaminants (listed alphabetically) from all generators (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Ag-110	8.4E-01	<0.05	4.6E-03	6.1E+00
Am-241	1.5E+05	1.3	1.1E+05	2.0E+05
Am-242	7.6E-03	<0.05	4.0E-05	5.5E-02
Am-243	2.3E-01	<0.05	2.4E-03	1.6E+00
Ba-133	5.4E-04	<0.05	2.8E-06	3.9E-03
Ba-137m	3.4E+00	<0.05	1.6E-02	2.4E+01
Ba-140	6.6E+02	<0.05	2.8E+01	3.6E+03
Be-10	4.3E+01	<0.05	2.9E-01	3.1E+02
Be-7	3.5E-01	<0.05	7.1E-03	2.2E+00
C-14	1.6E+04	0.1	7.8E+02	8.5E+04
Ca-45	6.7E-04	<0.05	3.2E-06	4.8E-03
Cd-104	1.5E-07	<0.05	3.0E-09	9.5E-07
Cd-109	4.1E-01	<0.05	1.1E-02	2.5E+00
Ce-141	7.6E+02	<0.05	3.7E+01	4.0E+03
Ce-144	1.5E+05	1.3	2.6E+04	5.2E+05
Cf-252	1.0E-02	<0.05	9.8E-05	6.9E-02
Cl-36	3.1E-01	<0.05	3.1E-03	2.2E+00
Cm-242	9.1E+01	<0.05	1.2E+01	3.4E+02
Cm-244	8.0E+01	<0.05	4.9E+00	4.0E+02
Co-57	4.8E+00	<0.05	9.6E-02	3.0E+01
Co-58	1.6E+05	1.3	4.7E+04	4.0E+05
Co-60	2.8E+06	23.8	2.2E+06	3.7E+06
Cr-51	7.3E+05	6.1	1.6E+04	4.5E+06
Cs-134	2.2E+03	<0.05	3.7E+02	7.4E+03
Cs-136	7.7E-01	<0.05	2.6E-02	4.4E+00
Cs-137	7.0E+05	5.8	4.9E+05	9.5E+05
Er-169	7.6E-03	<0.05	7.4E-05	5.3E-02
Eu-152	2.4E+02	<0.05	2.1E+02	2.6E+02
Eu-154	3.0E+03	<0.05	8.8E+01	1.7E+04

Table 3-2b. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Eu-155	1.5E+04	0.1	7.9E+02	7.6E+04
Fe-55	3.8E+06	31.5	2.2E+06	6.0E+06
Fe-59	9.1E+04	0.8	2.0E+03	5.6E+05
H-3	1.2E+06	9.8	7.5E+05	1.8E+06
Hf-181	3.6E-01	< 0.05	3.0E-03	2.6E+00
Hg-203	1.2E-02	< 0.05	5.8E-05	8.7E-02
I-125	2.9E-02	< 0.05	5.9E-04	1.8E-01
I-129	9.9E-02	< 0.05	6.2E-03	4.8E-01
I-131	1.5E+00	< 0.05	8.2E-03	1.1E+01
I-133	5.0E-02	< 0.05	2.5E-04	3.6E-01
Ir-192	5.4E+01	< 0.05	1.4E+00	3.2E+02
Kr-85	1.3E+00	< 0.05	6.2E-03	9.5E+00
La-140	7.7E+02	< 0.05	3.2E+01	4.2E+03
Mn-53	1.0E-03	< 0.05	2.0E-05	6.3E-03
Mn-54	1.8E+05	1.5	3.7E+04	5.4E+05
Mn-56	2.7E+01	< 0.05	1.6E-01	2.0E+02
Mo-99	1.0E+00	< 0.05	1.5E-02	6.6E+00
Na-22	3.0E-01	< 0.05	5.4E-03	2.0E+00
Nb-94	4.9E+01	< 0.05	2.5E+01	8.8E+01
Nb-95	2.4E+03	< 0.05	1.4E+03	3.9E+03
Ni-59	5.1E+03	< 0.05	2.4E+02	2.7E+04
Ni-63	7.4E+05	6.2	4.7E+05	1.1E+06
Np-237	2.4E+00	< 0.05	1.7E-01	1.1E+01
P-32	9.2E-02	< 0.05	1.4E-03	6.1E-01
Pb-210	9.1E-06	< 0.05	1.8E-07	5.7E-05
Pb-212	2.0E-05	< 0.05	4.0E-07	1.3E-04
Pm-147	8.1E+01	< 0.05	9.6E-01	5.5E+02
Po-210	7.5E+01	< 0.05	1.4E+00	4.8E+02
Pr-143	6.2E+02	< 0.05	2.1E+01	3.6E+03

Table 3-2b. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Pr-144	4.2E+04	0.4	3.2E+03	1.9E+05
Pu-238	2.5E+03	<0.05	4.3E+02	8.6E+03
Pu-239	6.6E+04	0.5	4.7E+04	8.9E+04
Pu-240	1.5E+04	0.1	1.0E+04	2.2E+04
Pu-241	4.0E+05	3.3	2.9E+05	5.4E+05
Pu-242	9.9E-01	<0.05	7.3E-01	1.3E+00
Ra-225	2.0E-06	<0.05	1.5E-06	2.5E-06
Ra-226	5.9E+01	<0.05	4.4E+01	7.6E+01
Rb-86	7.1E+00	<0.05	1.1E-01	4.6E+01
Rh-103m	2.7E+02	<0.05	9.2E+00	1.5E+03
Rh-106	6.8E+03	<0.05	5.0E+03	9.0E+03
Rn-222	1.0E-06	<0.05	2.0E-08	6.3E-06
Ru-103	3.6E+02	<0.05	1.5E+01	1.9E+03
Ru-106	6.8E+03	<0.05	5.0E+03	9.0E+03
S-35	8.8E-02	<0.05	1.6E-03	5.6E-01
Sb-124	1.8E+03	<0.05	1.0E+01	1.3E+04
Sb-125	1.3E+05	1.1	1.1E+05	1.4E+05
Sc-44	2.5E-02	<0.05	5.0E-04	1.6E-01
Sc-46	5.3E+01	<0.05	2.9E-01	3.8E+02
Sn-119m	2.7E+04	0.2	2.5E+04	3.0E+04
Sr-85	2.9E-02	<0.05	1.5E-04	2.1E-01
Sr-89	4.7E+02	<0.05	2.0E+01	2.6E+03
Sr-90	4.5E+05	3.8	1.0E+05	1.3E+06
Ta-182	8.5E+00	<0.05	3.5E-01	4.6E+01
Tc-99	2.6E+02	<0.05	1.2E+01	1.4E+03
Th-230	1.8E-02	<0.05	1.4E-02	2.2E-02
Th-232	1.3E+00	<0.05	1.1E+00	1.6E+00
Tl-204	6.7E-04	<0.05	3.2E-06	4.8E-03
Tm-170	3.4E+00	<0.05	1.6E-02	2.4E+01

Table 3-2b. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
U-232	8.4E+00	<0.05	6.8E+00	1.0E+01
U-233	1.1E+00	<0.05	7.8E-01	1.6E+00
U-234	6.4E+01	<0.05	5.0E+01	8.2E+01
U-235	5.1E+00	<0.05	4.2E+00	6.0E+00
U-236	2.5E+00	<0.05	1.9E+00	3.3E+00
U-238	1.1E+02	<0.05	7.0E+01	1.8E+02
Y-88	2.5E-02	<0.05	5.0E-04	1.6E-01
Y-90	1.9E+04	0.2	1.8E+03	8.2E+04
Y-91	5.3E+02	<0.05	2.2E+01	2.9E+03
Yb-164	7.6E-03	<0.05	7.4E-05	5.3E-02
Zn-65	3.6E+02	<0.05	3.8E+00	2.5E+03
Zr-93	4.0E+00	<0.05	2.4E+00	6.4E+00
Zr-95	7.6E+04	0.6	7.0E+04	8.2E+04
Total	1.2E+07	99.8 ^a		

a. Total in table does not equal 100.0% due to rounding.

Table 3-3a. Inventory of nonradiological contaminants (listed by quantity) from Test Area North.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
15625-89-5	Trimethylolpropane-triester	1.2E+06	8.4E+05	1.6E+06
7440-41-7	Beryllium	2.2E+04	9.5E+03	4.4E+04
7440-02-0	Nickel	2.2E+03	1.0E+03	4.1E+03
7440-47-3	Chromium	5.5E+02	2.6E+02	1.0E+03
11135-81-2	Sodium potassium	2.7E+02	1.9E+02	3.7E+02
7439-97-6	Mercury	Unknown	NA ^b	NA
7439-92-1	Lead	Unknown	NA	NA
60-29-7	Ether	Unknown	NA	NA
1304-56-9	Beryllium oxide	Unknown	NA	NA

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-3b. Inventory of nonradiological contaminants (listed alphabetically) from Test Area North.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7440-41-7	Beryllium	2.2E+04	9.5E+03	4.4E+04
1304-56-9	Beryllium oxide	Unknown	NA ^b	NA
7440-47-3	Chromium	5.5E+02	2.6E+02	1.0E+03
60-29-7	Ether	Unknown	NA	NA
7439-92-1	Lead	Unknown	NA	NA
7439-97-6	Mercury	Unknown	NA	NA
7440-02-0	Nickel	2.2E+03	1.0E+03	4.1E+03
11135-81-2	Sodium potassium	2.7E+02	1.9E+02	3.7E+02
15625-89-5	Trimethylolpropane-triester	1.2E+06	8.4E+05	1.6E+06

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-4a. Inventory of radiological contaminants (listed by quantity) from Test Area North (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Fe-55	9.4E+03	26.6	2.6E+03	2.4E+04
Co-60	9.0E+03	25.4	4.2E+03	1.7E+04
Ni-59	3.1E+03	8.8	5.6E+01	2.0E+04
Cs-137	2.0E+03	5.7	9.8E+02	3.6E+03
Mn-54	1.6E+03	4.7	4.1E+01	1.0E+04
Fe-59	1.3E+03	3.7	2.0E+01	8.6E+03
Cr-51	1.1E+03	3.2	1.7E+01	7.4E+03
Sr-90	9.5E+02	2.7	3.2E+01	5.4E+03
Co-58	8.8E+02	2.5	1.4E+01	5.8E+03
La-140	7.7E+02	2.2	3.2E+01	4.2E+03
Ce-141	7.1E+02	2.0	3.0E+01	3.8E+03
Ba-140	6.6E+02	1.9	2.8E+01	3.6E+03
Pr-143	6.2E+02	1.8	2.1E+01	3.6E+03
Zr-95	5.6E+02	1.6	2.4E+01	3.0E+03
Y-91	5.3E+02	1.5	2.2E+01	2.9E+03
Sr-89	4.7E+02	1.3	2.0E+01	2.6E+03
Ru-103	3.6E+02	1.0	1.5E+01	1.9E+03
Nb-95	3.1E+02	0.9	1.3E+01	1.7E+03
Rh-103m	2.7E+02	0.8	9.2E+00	1.5E+03
Ni-63	2.4E+02	0.7	6.9E+01	6.2E+02
Ce-144	2.0E+02	0.6	1.2E+01	1.0E+03
Pm-147	8.1E+01	0.2	9.5E-01	5.5E+02
H-3	2.2E+01	0.1	9.8E-01	1.2E+02
Ru-106	1.7E+01	<0.05	7.0E-01	9.5E+01
Y-90	1.4E+01	<0.05	1.8E-01	9.6E+01
Cs-134	1.3E+01	<0.05	3.8E-01	7.9E+01
Rb-86	7.1E+00	<0.05	1.1E-01	4.6E+01
Po-210	5.0E+00	<0.05	2.6E-02	3.6E+01
Rh-106	3.0E+00	<0.05	4.5E-02	1.9E+01

Table 3-4a. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Pu-238	2.1E+00	<0.05	2.0E-02	1.4E+01
Ra-226	1.0E+00	<0.05	8.2E-01	1.2E+00
Cs-136	7.7E-01	<0.05	2.6E-02	4.4E+00
C-14	2.8E-01	<0.05	4.0E-03	1.9E+00
Eu-154	1.8E-01	<0.05	9.8E-04	1.3E+00
U-234	9.8E-02	<0.05	7.4E-02	1.3E-01
U-235	5.6E-02	<0.05	2.6E-02	1.1E-01
Sb-125	4.3E-02	<0.05	4.2E-04	3.0E-01
Eu-155	4.2E-02	<0.05	4.8E-04	2.9E-01
Pu-239	3.6E-02	<0.05	2.6E-04	2.6E-01
Hf-181	3.5E-02	<0.05	1.8E-04	2.5E-01
Nb-94	8.2E-03	<0.05	1.1E-04	5.5E-02
U-238	5.7E-03	<0.05	4.7E-03	6.8E-03
Pu-241	8.1E-04	<0.05	1.2E-05	5.3E-03
Tc-99	6.1E-05	<0.05	1.2E-06	3.8E-04
U-236	2.7E-07	<0.05	1.2E-07	5.5E-07
Cm-242	1.2E-09	<0.05	2.0E-11	8.0E-09
I-129	3.0E-10	<0.05	1.0E-11	1.9E-09
Total	3.5E+04	99.9 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-4b. Inventory of radiological contaminants (listed alphabetically) from Test Area North (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Ba-140	6.6E+02	1.9	2.8E+01	3.6E+03
C-14	2.8E-01	<0.05	4.0E-03	1.9E+00
Ce-141	7.1E+02	2.0	3.0E+01	3.8E+03
Ce-144	2.0E+02	0.6	1.2E+01	1.0E+03
Cm-242	1.2E-09	<0.05	2.0E-11	8.0E-09
Co-58	8.8E+02	2.5	1.4E+01	5.8E+03
Co-60	9.0E+03	25.4	4.2E+03	1.7E+04
Cr-51	1.1E+03	3.2	1.7E+01	7.4E+03
Cs-134	1.3E+01	<0.05	3.8E-01	7.9E+01
Cs-136	7.7E-01	<0.05	2.6E-02	4.4E+00
Cs-137	2.0E+03	5.7	9.8E+02	3.6E+03
Eu-154	1.8E-01	<0.05	9.8E-04	1.3E+00
Eu-155	4.2E-02	<0.05	4.8E-04	2.9E-01
Fe-55	9.4E+03	26.6	2.6E+03	2.4E+04
Fe-59	1.3E+03	3.7	2.0E+01	8.6E+03
H-3	2.2E+01	0.1	9.8E-01	1.2E+02
Hf-181	3.5E-02	<0.05	1.8E-04	2.5E-01
I-129	3.0E-10	<0.05	1.0E-11	1.9E-09
La-140	7.7E+02	2.2	3.2E+01	4.2E+03
Mn-54	1.6E+03	4.7	4.1E+01	1.0E+04
Nb-94	8.2E-03	<0.05	1.1E-04	5.5E-02
Nb-95	3.1E+02	0.9	1.3E+01	1.7E+03
Ni-59	3.1E+03	8.8	5.6E+01	2.0E+04
Ni-63	2.4E+02	0.7	6.9E+01	6.2E+02
Pm-147	8.1E+01	0.2	9.5E-01	5.5E+02
Po-210	5.0E+00	<0.05	2.6E-02	3.6E+01
Pr-143	6.2E+02	1.8	2.1E+01	3.6E+03
Pu-238	2.1E+00	<0.05	2.0E-02	1.4E+01
Pu-239	3.6E-02	<0.05	2.6E-04	2.6E-01

Table 3-4b. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Pu-241	8.1E-04	< 0.05	1.2E-05	5.3E-03
Ra-226	1.0E+00	< 0.05	8.2E-01	1.2E+00
Rb-86	7.1E+00	< 0.05	1.1E-01	4.6E+01
Rh-103m	2.7E+02	0.8	9.2E+00	1.5E+03
Rh-106	3.0E+00	< 0.05	4.5E-02	1.9E+01
Ru-103	3.6E+02	1.0	1.5E+01	1.9E+03
Ru-106	1.7E+01	< 0.05	7.0E-01	9.5E+01
Sb-125	4.3E-02	< 0.05	4.2E-04	3.0E-01
Sr-89	4.7E+02	1.3	2.0E+01	2.6E+03
Sr-90	9.5E+02	2.7	3.2E+01	5.4E+03
Tc-99	6.1E-05	< 0.05	1.2E-06	3.8E-04
U-234	9.8E-02	< 0.05	7.4E-02	1.3E-01
U-235	5.6E-02	< 0.05	2.6E-02	1.1E-01
U-236	2.7E-07	< 0.05	1.2E-07	5.5E-07
U-238	5.7E-03	< 0.05	4.7E-03	6.8E-03
Y-90	1.4E+01	< 0.05	1.8E-01	9.6E+01
Y-91	5.3E+02	1.5	2.2E+01	2.9E+03
Zr-95	5.6E+02	1.6	2.4E+01	3.0E+03
Total	3.5E+04	99.9 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-5a. Inventory of nonradiological contaminants (listed by quantity) from the Test Reactor Area.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7439-92-1	Lead	1.4E+08	7.8E+07	2.3E+08
7440-41-7	Beryllium	1.4E+07	1.4E+07	1.5E+07
7440-43-9	Cadmium	1.5E+06	8.4E+05	2.4E+06
1332-21-4	Asbestos	1.1E+06	3.8E+05	2.5E+06
7664417	Ammonia	7.8E+05	2.7E+05	1.8E+06
26140-60-3	Terphenyl	4.5E+05	1.6E+05	1.0E+06
7440-23-5	Sodium	6.8E+04	6.1E+04	7.5E+04
8032-32-4	Benzine	4.0E+03	3.3E+03	4.8E+03

a. CAS—Chemical Abstract Services.

Table 3-5b. Inventory of nonradiological contaminants (listed alphabetically) from the Test Reactor Area.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7664417	Ammonia	7.8E+05	2.7E+05	1.8E+06
1332-21-4	Asbestos	1.1E+06	3.8E+05	2.5E+06
8032-32-4	Benzine	4.0E+03	3.3E+03	4.8E+03
7440-41-7	Beryllium	1.4E+07	1.4E+07	1.5E+07
7440-43-9	Cadmium	1.5E+06	8.4E+05	2.4E+06
7439-92-1	Lead	1.4E+08	7.8E+07	2.3E+08
7440-23-5	Sodium	6.8E+04	6.1E+04	7.5E+04
26140-60-3	Terphenyl	4.5E+05	1.6E+05	1.0E+06

a. CAS—Chemical Abstract Services.

Table 3-6a. Inventory of radiological contaminants (listed by quantity) from the Test Reactor Area (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Fe-55	2.7E+06	40.9	1.3E+06	5.1E+06
Co-60	1.2E+06	18.1	6.5E+05	2.0E+06
H-3	1.2E+06	17.6	7.5E+05	1.7E+06
Cr-51	5.2E+05	7.8	5.6E+03	3.6E+06
Ni-63	5.0E+05	7.5	2.5E+05	8.9E+05
Cs-137	3.5E+05	5.3	1.9E+05	6.0E+05
Sr-90	6.5E+04	1.0	4.5E+03	3.1E+05
Fe-59	6.4E+04	1.0	6.8E+02	4.4E+05
C-14	1.6E+04	0.2	7.8E+02	8.5E+04
Eu-155	1.5E+04	0.2	7.7E+02	7.5E+04
Pu-241	1.2E+04	0.2	9.1E+02	5.3E+04
Ce-144	7.9E+03	0.1	4.8E+02	3.9E+04
Eu-154	2.7E+03	<0.05	6.4E+01	1.6E+04
Ni-59	1.4E+03	<0.05	1.3E+02	5.7E+03
Sb-125	1.1E+03	<0.05	8.4E+00	7.9E+03
Am-241	6.8E+02	<0.05	9.2E+01	2.5E+03
Pu-238	6.2E+02	<0.05	6.9E+00	4.3E+03
Zn-65	3.6E+02	<0.05	3.7E+00	2.5E+03
Tc-99	2.6E+02	<0.05	1.2E+01	1.4E+03
Cm-242	9.1E+01	<0.05	1.2E+01	3.4E+02
Pu-239	8.6E+01	<0.05	4.7E+00	4.3E+02
Cm-244	8.0E+01	<0.05	4.9E+00	4.0E+02
Mn-54	6.8E+01	<0.05	8.1E-01	4.6E+02
Sc-46	5.2E+01	<0.05	2.6E-01	3.7E+02
Mn-56	2.7E+01	<0.05	1.6E-01	2.0E+02
Pu-240	2.4E+01	<0.05	6.9E-01	1.4E+02
Zr-95	1.4E+01	<0.05	7.4E-02	1.0E+02
U-232	8.4E+00	<0.05	6.8E+00	1.0E+01
U-234	3.8E+00	<0.05	3.0E+00	4.8E+00

Table 3-6a. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Ce-141	3.0E+00	< 0.05	1.6E-02	2.2E+01
Ra-226	2.5E+00	< 0.05	2.2E+00	2.9E+00
Np-237	2.4E+00	< 0.05	1.7E-01	1.1E+01
U-235	1.8E+00	< 0.05	1.5E+00	2.0E+00
U-236	1.5E+00	< 0.05	1.2E+00	1.8E+00
I-131	1.4E+00	< 0.05	7.3E-03	1.0E+01
U-238	1.2E+00	< 0.05	1.0E+00	1.5E+00
Ru-103	1.0E+00	< 0.05	5.1E-03	7.3E+00
Co-58	9.9E-01	< 0.05	5.6E-03	7.2E+00
Ta-182	5.0E-01	< 0.05	2.5E-03	3.6E+00
Be-10	3.5E-01	< 0.05	3.0E-02	1.6E+00
Hf-181	3.3E-01	< 0.05	2.3E-03	2.4E+00
Am-243	2.3E-01	< 0.05	2.4E-03	1.6E+00
Cs-134	1.3E-01	< 0.05	6.9E-04	9.6E-01
La-140	1.2E-01	< 0.05	9.9E-04	8.4E-01
I-129	9.9E-02	< 0.05	6.2E-03	4.8E-01
Ba-140	9.0E-02	< 0.05	4.6E-04	6.5E-01
Eu-152	7.4E-02	< 0.05	7.3E-04	5.1E-01
I-133	5.0E-02	< 0.05	2.5E-04	3.6E-01
Th-232	2.0E-02	< 0.05	1.7E-02	2.5E-02
Nb-95	2.0E-02	< 0.05	1.0E-04	1.4E-01
Pu-242	1.3E-02	< 0.05	1.0E-04	9.1E-02
U-233	9.5E-03	< 0.05	7.7E-03	1.2E-02
Am-242	7.6E-03	< 0.05	4.0E-05	5.5E-02
Total	6.6E+06	99.9 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-6b. Inventory of radiological contaminants (listed alphabetically) from the Test Reactor Area (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Am-241	6.8E+02	<0.05	9.2E+01	2.5E+03
Am-242	7.6E-03	<0.05	4.0E-05	5.5E-02
Am-243	2.3E-01	<0.05	2.4E-03	1.6E+00
Ba-140	9.0E-02	<0.05	4.6E-04	6.5E-01
Be-10	3.5E-01	<0.05	3.0E-02	1.6E+00
C-14	1.6E+04	0.2	7.8E+02	8.5E+04
Ce-141	3.0E+00	<0.05	1.6E-02	2.2E+01
Ce-144	7.9E+03	0.1	4.8E+02	3.9E+04
Cm-242	9.1E+01	<0.05	1.2E+01	3.4E+02
Cm-244	8.0E+01	<0.05	4.9E+00	4.0E+02
Co-58	9.9E-01	<0.05	5.6E-03	7.2E+00
Co-60	1.2E+06	18.1	6.5E+05	2.0E+06
Cr-51	5.2E+05	7.8	5.6E+03	3.6E+06
Cs-134	1.3E-01	<0.05	6.9E-04	9.6E-01
Cs-137	3.5E+05	5.3	1.9E+05	6.0E+05
Eu-152	7.4E-02	<0.05	7.3E-04	5.1E-01
Eu-154	2.7E+03	<0.05	6.4E+01	1.6E+04
Eu-155	1.5E+04	0.2	7.7E+02	7.5E+04
Fe-55	2.7E+06	40.9	1.3E+06	5.1E+06
Fe-59	6.4E+04	1.0	6.8E+02	4.4E+05
H-3	1.2E+06	17.6	7.5E+05	1.7E+06
Hf-181	3.3E-01	<0.05	2.3E-03	2.4E+00
I-129	9.9E-02	<0.05	6.2E-03	4.8E-01
I-131	1.4E+00	<0.05	7.3E-03	1.0E+01
I-133	5.0E-02	<0.05	2.5E-04	3.6E-01
La-140	1.2E-01	<0.05	9.9E-04	8.4E-01
Mn-54	6.8E+01	<0.05	8.1E-01	4.6E+02
Mn-56	2.7E+01	<0.05	1.6E-01	2.0E+02
Nb-95	2.0E-02	<0.05	1.0E-04	1.4E-01

Table 3-6b. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Ni-59	1.4E+03	< 0.05	1.3E+02	5.7E+03
Ni-63	5.0E+05	7.5	2.5E+05	8.9E+05
Np-237	2.4E+00	< 0.05	1.7E-01	1.1E+01
Pu-238	6.2E+02	< 0.05	6.9E+00	4.3E+03
Pu-239	8.6E+01	< 0.05	4.7E+00	4.3E+02
Pu-240	2.4E+01	< 0.05	6.9E-01	1.4E+02
Pu-241	1.2E+04	0.2	9.1E+02	5.3E+04
Pu-242	1.3E-02	< 0.05	1.0E-04	9.1E-02
Ra-226	2.5E+00	< 0.05	2.2E+00	2.9E+00
Ru-103	1.0E+00	< 0.05	5.1E-03	7.3E+00
Sb-125	1.1E+03	< 0.05	8.4E+00	7.9E+03
Sc-46	5.2E+01	< 0.05	2.6E-01	3.7E+02
Sr-90	6.5E+04	1.0	4.5E+03	3.1E+05
Ta-182	5.0E-01	< 0.05	2.5E-03	3.6E+00
Tc-99	2.6E+02	< 0.05	1.2E+01	1.4E+03
Th-232	2.0E-02	< 0.05	1.7E-02	2.5E-02
U-232	8.4E+00	< 0.05	6.8E+00	1.0E+01
U-233	9.5E-03	< 0.05	7.7E-03	1.2E-02
U-234	3.8E+00	< 0.05	3.0E+00	4.8E+00
U-235	1.8E+00	< 0.05	1.5E+00	2.0E+00
U-236	1.5E+00	< 0.05	1.2E+00	1.8E+00
U-238	1.2E+00	< 0.05	1.0E+00	1.5E+00
Zn-65	3.6E+02	< 0.05	3.7E+00	2.5E+03
Zr-95	1.4E+01	< 0.05	7.4E-02	1.0E+02
Total	6.6E+06	99.9 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-7a. Inventory of nonradiological contaminants (listed by quantity) from the Idaho Chemical Processing Plant.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7784-27-2	Aluminum nitrate nonahydrate	1.9E+08	1.5E+08	2.4E+08
7697-37-2	Nitric acid	4.8E+07	3.7E+07	6.1E+07
7439-92-1	Lead	2.6E+07	2.5E+07	2.8E+07
7440-67-7	Zirconium	1.8E+07	1.5E+07	2.2E+07
108-10-1	Methyl isobutyl ketone	8.9E+06	7.0E+06	1.1E+07
7664393	Hydrofluoric acid	7.5E+06	5.9E+06	9.5E+06
7631-99-4	Sodium nitrate	2.4E+06	1.9E+06	3.0E+06
71-55-6	1,1,1-trichloroethane	1.7E+06	1.4E+06	2.2E+06
126-73-8	Tributyl phosphate	1.0E+06	7.8E+05	1.3E+06
7783-34-8	Mercury nitrate monohydrate	8.1E+05	6.3E+05	1.0E+06
10102064	Uranyl nitrate	2.2E+05	1.7E+05	2.8E+05
1332-21-4	Asbestos	1.1E+05	9.3E+04	1.3E+05
7664-93-9	Sulfuric acid	1.1E+05	8.4E+04	1.4E+05
56-23-5	Carbon tetrachloride	2.6E+04	2.0E+04	3.2E+04
67-64-1	Acetone	2.2E+04	1.8E+04	2.8E+04
64175	Ethyl alcohol	2.2E+04	1.8E+04	2.8E+04
3251-23-8	Copper nitrate	3.3E+02	2.6E+02	4.1E+02
7440-41-7	Beryllium	1.1E+02	8.8E+01	1.4E+02
7440-47-3	Chromium	2.0E+01	1.5E+01	2.5E+01

a. CAS—Chemical Abstract Services.

Table 3-7b. Inventory of nonradiological contaminants (listed alphabetically) from the Idaho Chemical Processing Plant.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
71-55-6	1,1,1-trichloroethane	1.7E+06	1.4E+06	2.2E+06
67-64-1	Acetone	2.2E+04	1.8E+04	2.8E+04
7784-27-2	Aluminum nitrate nonahydrate	1.9E+08	1.5E+08	2.4E+08
1332-21-4	Asbestos	1.1E+05	9.3E+04	1.3E+05
7440-41-7	Beryllium	1.1E+02	8.8E+01	1.4E+02
56-23-5	Carbon tetrachloride	2.6E+04	2.0E+04	3.2E+04
7440-47-3	Chromium	2.0E+01	1.5E+01	2.5E+01
3251-23-8	Copper nitrate	3.3E+02	2.6E+02	4.1E+02
64175	Ethyl alcohol	2.2E+04	1.8E+04	2.8E+04
7664393	Hydrofluoric acid	7.5E+06	5.9E+06	9.5E+06
7439-92-1	Lead	2.6E+07	2.5E+07	2.8E+07
7783-34-8	Mercury nitrate monohydrate	8.1E+05	6.3E+05	1.0E+06
108-10-1	Methyl isobutyl ketone	8.9E+06	7.0E+06	1.1E+07
7697-37-2	Nitric acid	4.8E+07	3.7E+07	6.1E+07
7631-99-4	Sodium nitrate	2.4E+06	1.9E+06	3.0E+06
7664-93-9	Sulfuric acid	1.1E+05	8.4E+04	1.4E+05
126-73-8	Tributyl phosphate	1.0E+06	7.8E+05	1.3E+06
10102064	Uranyl nitrate	2.2E+05	1.7E+05	2.8E+05
7440-67-7	Zirconium	1.8E+07	1.5E+07	2.2E+07

a. CAS—Chemical Abstract Services.

Table 3-8a. Inventory of radiological contaminants (listed by quantity) from the Idaho Chemical Processing Plant (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Co-60	2.0E+05	28.9	1.2E+05	3.2E+05
Co-58	9.0E+04	13.0	6.3E+04	1.2E+05
Cr-51	8.4E+04	12.1	5.1E+04	1.3E+05
Mn-54	8.1E+04	11.7	6.0E+04	1.1E+05
Cs-137	4.2E+04	6.1	3.6E+04	4.8E+04
Ce-144	4.2E+04	6.1	3.2E+03	1.9E+05
Pr-144	4.2E+04	6.1	3.2E+03	1.9E+05
Ni-63	2.5E+04	3.6	1.5E+04	3.9E+04
Fe-59	2.5E+04	3.6	1.5E+04	3.8E+04
Sr-90	2.0E+04	2.8	1.9E+03	8.2E+04
Y-90	1.9E+04	2.8	1.8E+03	8.2E+04
Rh-106	6.8E+03	1.0	5.0E+03	9.0E+03
Ru-106	6.8E+03	1.0	5.0E+03	9.0E+03
Sb-125	2.9E+03	0.4	2.2E+03	3.9E+03
Nb-95	2.1E+03	0.3	1.6E+03	2.8E+03
Zr-95	2.1E+03	0.3	1.5E+03	2.8E+03
Cs-134	4.9E+02	0.1	3.0E+02	7.4E+02
Eu-154	2.9E+02	<0.05	1.3E+02	5.4E+02
Eu-152	2.4E+02	<0.05	2.1E+02	2.6E+02
Ni-59	1.6E+02	<0.05	9.7E+01	2.6E+02
Eu-155	1.1E+02	<0.05	3.6E+01	2.7E+02
Nb-94	4.7E+01	<0.05	2.8E+01	7.5E+01
C-14	4.3E+01	<0.05	2.6E+01	6.8E+01
Ce-141	3.1E+01	<0.05	2.8E+01	3.4E+01
U-234	4.8E+00	<0.05	3.8E+00	6.1E+00
Zr-93	4.0E+00	<0.05	2.4E+00	6.4E+00
Pu-241	1.5E+00	<0.05	1.4E+00	1.6E+00
Pu-238	1.0E+00	<0.05	4.6E-01	1.9E+00
U-238	6.6E-01	<0.05	5.5E-01	7.9E-01

Table 3-8a. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Pu-239	4.8E-01	< 0.05	2.1E-01	9.4E-01
U-235	1.6E-01	< 0.05	1.2E-01	2.0E-01
Pu-242	1.0E-01	< 0.05	9.0E-02	1.1E-01
Tc-99	3.0E-02	< 0.05	1.8E-02	4.8E-02
Pu-240	1.0E-02	< 0.05	9.0E-03	1.1E-02
U-236	4.0E-03	< 0.05	3.6E-03	4.4E-03
Total	6.9E+05	99.9 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-8b. Inventory of radiological contaminants (listed alphabetically) from the Idaho Chemical Processing Plant (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
C-14	4.3E+01	<0.05	2.6E+01	6.8E+01
Ce-141	3.1E+01	<0.05	2.8E+01	3.4E+01
Ce-144	4.2E+04	6.1	3.2E+03	1.9E+05
Co-58	9.0E+04	13.0	6.3E+04	1.2E+05
Co-60	2.0E+05	28.9	1.2E+05	3.2E+05
Cr-51	8.4E+04	12.1	5.1E+04	1.3E+05
Cs-134	4.9E+02	0.1	3.0E+02	7.4E+02
Cs-137	4.2E+04	6.1	3.6E+04	4.8E+04
Eu-152	2.4E+02	<0.05	2.1E+02	2.6E+02
Eu-154	2.9E+02	<0.05	1.3E+02	5.4E+02
Eu-155	1.1E+02	<0.05	3.6E+01	2.7E+02
Fe-59	2.5E+04	3.6	1.5E+04	3.8E+04
Mn-54	8.1E+04	11.7	6.0E+04	1.1E+05
Nb-94	4.7E+01	<0.05	2.8E+01	7.5E+01
Nb-95	2.1E+03	0.3	1.6E+03	2.8E+03
Ni-59	1.6E+02	<0.05	9.7E+01	2.6E+02
Ni-63	2.5E+04	3.6	1.5E+04	3.9E+04
Pr-144	4.2E+04	6.1	3.2E+03	1.9E+05
Pu-238	1.0E+00	<0.05	4.6E-01	1.9E+00
Pu-239	4.8E-01	<0.05	2.1E-01	9.4E-01
Pu-240	1.0E-02	<0.05	9.0E-03	1.1E-02
Pu-241	1.5E+00	<0.05	1.4E+00	1.6E+00
Pu-242	1.0E-01	<0.05	9.0E-02	1.1E-01
Rh-106	6.8E+03	1.0	5.0E+03	9.0E+03
Ru-106	6.8E+03	1.0	5.0E+03	9.0E+03
Sb-125	2.9E+03	0.4	2.2E+03	3.9E+03
Sr-90	2.0E+04	2.8	1.9E+03	8.2E+04
Tc-99	3.0E-02	<0.05	1.8E-02	4.8E-02
U-234	4.8E+00	<0.05	3.8E+00	6.1E+00

Table 3-8b. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
U-235	1.6E-01	< 0.05	1.2E-01	2.0E-01
U-236	4.0E-03	< 0.05	3.6E-03	4.4E-03
U-238	6.6E-01	< 0.05	5.5E-01	7.9E-01
Y-90	1.9E+04	2.8	1.8E+03	8.2E+04
Zr-93	4.0E+00	< 0.05	2.4E+00	6.4E+00
Zr-95	<u>2.1E+03</u>	0.3	<u>1.5E+03</u>	<u>2.8E+03</u>
Total	<u>6.9E+05</u>	99.9 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-9a. Inventory of nonradiological contaminants (listed by quantity) from the Naval Reactors Facility.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
—	Zirconium alloys	5.9E+06	4.7E+06	7.3E+06
7664393	Hydrofluoric acid	Unknown	NA ^b	NA
7439-92-1	Lead	Unknown	NA	NA
1332-21-4	Asbestos	Unknown	NA	NA

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-9b. Inventory of nonradiological contaminants (listed alphabetically) from the Naval Reactors Facility.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
1332-21-4	Asbestos	Unknown	NA ^b	NA
7664393	Hydrofluoric acid	Unknown	NA	NA
7439-92-1	Lead	Unknown	NA	NA
—	Zirconium alloys	5.9E+06	4.7E+06	7.3E+06

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-10a. Inventory of radiological contaminants (listed by quantity) from the Naval Reactors Facility (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Co-60	1.1E+06	38.5	1.0E+06	1.2E+06
Fe-55	1.0E+06	36.7	9.9E+05	1.1E+06
Ni-63	2.2E+05	7.6	2.0E+05	2.3E+05
Sr-90	1.4E+05	4.7	9.2E+04	1.9E+05
Cs-137	1.4E+05	4.7	9.2E+04	1.9E+05
Sb-125	1.2E+05	4.3	1.1E+05	1.4E+05
Zr-95	7.3E+04	2.5	6.8E+04	7.8E+04
Sn-119m	2.7E+04	0.9	2.5E+04	3.0E+04
Co-58	2.0E+03	0.1	1.7E+03	2.4E+03
Total	2.9E+06	100.0		

Table 3-10b. Inventory of radiological contaminants (listed alphabetically) from the Naval Reactors Facility (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Co-58	2.0E+03	0.1	1.7E+03	2.4E+03
Co-60	1.1E+06	38.5	1.0E+06	1.2E+06
Cs-137	1.4E+05	4.7	9.2E+04	1.9E+05
Fe-55	1.0E+06	36.7	9.9E+05	1.1E+06
Ni-63	2.2E+05	7.6	2.0E+05	2.3E+05
Sb-125	1.2E+05	4.3	1.1E+05	1.4E+05
Sn-119m	2.7E+04	0.9	2.5E+04	3.0E+04
Sr-90	1.4E+05	4.7	9.2E+04	1.9E+05
Zr-95	7.3E+04	2.5	6.8E+04	7.8E+04
Total	2.9E+06	100.0		

Table 3-11a. Inventory of nonradiological contaminants (listed by quantity) from Argonne National Laboratory-West.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7439-92-1	Lead	1.4E+07	1.1E+07	1.7E+07
67-66-3	Chloroform	3.7E+01	3.6E+01	3.7E+01
—	Aqua regia	3.1E+01	3.0E+01	3.2E+01
56-23-5	Carbon tetrachloride	1.6E+01	1.5E+01	1.6E+01
7440-47-3	Chromium	Unknown	NA ^b	NA
7440-43-9	Cadmium	Unknown	NA	NA
1332-21-4	Asbestos	Unknown	NA	NA

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-11b. Inventory of nonradiological contaminants (list alphabetically) from Argonne National Laboratory-West.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
—	Aqua regia	3.1E+01	3.0E+01	3.2E+01
1332-21-4	Asbestos	Unknown	NA ^b	NA
7440-43-9	Cadmium	Unknown	NA	NA
56-23-5	Carbon tetrachloride	1.6E+01	1.5E+01	1.6E+01
67-66-3	Chloroform	3.7E+01	3.6E+01	3.7E+01
7440-47-3	Chromium	Unknown	NA	NA
7439-92-1	Lead	1.4E+07	1.1E+07	1.7E+07

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-12a. Inventory of radiological contaminants (listed by quantity) from Argonne National Laboratory-West (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Co-60	3.3E+05	30.7	1.7E+05	5.9E+05
Sr-90	2.2E+05	20.7	1.8E+04	1.0E+06
Cs-137	1.4E+05	12.9	7.8E+04	2.3E+05
Cr-51	1.2E+05	11.4	8.7E+03	5.8E+05
Ce-144	1.0E+05	9.5	1.0E+04	4.3E+05
Mn-54	9.4E+04	8.6	6.7E+03	4.4E+05
Co-58	6.4E+04	5.8	4.7E+03	3.0E+05
Sb-124	1.8E+03	0.2	9.4E+00	1.3E+04
Cs-134	1.7E+03	0.2	1.9E+02	6.8E+03
Sb-125	1.2E+02	<0.05	7.8E-01	8.3E+02
Ce-141	1.9E+01	<0.05	1.7E+00	8.2E+01
Po-210	1.8E+01	<0.05	1.9E-01	1.2E+02
Fe-59	1.7E+01	<0.05	9.0E-02	1.2E+02
Pu-239	1.1E+01	<0.05	7.2E-02	7.9E+01
Ta-182	8.0E+00	<0.05	3.0E-01	4.4E+01
Nb-95	4.4E+00	<0.05	2.9E-01	2.1E+01
Be-10	4.3E+00	<0.05	2.2E-02	3.1E+01
U-234	3.4E+00	<0.05	3.0E+00	3.7E+00
Zr-95	1.4E+00	<0.05	9.2E-02	6.8E+00
U-238	1.2E+00	<0.05	1.2E+00	1.3E+00
U-235	2.7E-01	<0.05	2.6E-01	2.8E-01
Pu-238	2.2E-02	<0.05	5.9E-04	1.3E-01
Pu-240	8.0E-03	<0.05	6.0E-04	3.7E-02
Th-232	1.0E-05	<0.05	7.7E-06	1.3E-05
Am-241	1.8E-07	<0.05	4.8E-09	1.1E-06
Total	1.1E+06	100.0		

Table 3-12b. Inventory of radiological contaminants (listed alphabetically) from Argonne National Laboratory-West (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Am-241	1.8E-07	< 0.05	4.8E-09	1.1E-06
Be-10	4.3E+00	< 0.05	2.2E-02	3.1E+01
Ce-141	1.9E+01	< 0.05	1.7E+00	8.2E+01
Ce-144	1.0E+05	9.5	1.0E+04	4.3E+05
Co-58	6.4E+04	5.8	4.7E+03	3.0E+05
Co-60	3.3E+05	30.7	1.7E+05	5.9E+05
Cr-51	1.2E+05	11.4	8.7E+03	5.8E+05
Cs-134	1.7E+03	0.2	1.9E+02	6.8E+03
Cs-137	1.4E+05	12.9	7.8E+04	2.3E+05
Fe-59	1.7E+01	< 0.05	9.0E-02	1.2E+02
Mn-54	9.4E+04	8.6	6.7E+03	4.4E+05
Nb-95	4.4E+00	< 0.05	2.9E-01	2.1E+01
Po-210	1.8E+01	< 0.05	1.9E-01	1.2E+02
Pu-238	2.2E-02	< 0.05	5.9E-04	1.3E-01
Pu-239	1.1E+01	< 0.05	7.2E-02	7.9E+01
Pu-240	8.0E-03	< 0.05	6.0E-04	3.7E-02
Sb-124	1.8E+03	0.2	9.4E+00	1.3E+04
Sb-125	1.2E+02	< 0.05	7.8E-01	8.3E+02
Sr-90	2.2E+05	20.7	1.8E+04	1.0E+06
Ta-182	8.0E+00	< 0.05	3.0E-01	4.4E+01
Th-232	1.0E-05	< 0.05	7.7E-06	1.3E-05
U-234	3.4E+00	< 0.05	3.0E+00	3.7E+00
U-235	2.7E-01	< 0.05	2.6E-01	2.8E-01
U-238	1.2E+00	< 0.05	1.2E+00	1.3E+00
Zr-95	1.4E+00	< 0.05	9.2E-02	6.8E+00
Total	1.1E+06	100.0		

Table 3-13a. Inventory of nonradiological contaminants (listed by quantity) from the Rocky Flats Plant.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7631-99-4	Sodium nitrate	9.0E+08	5.9E+08	1.3E+09
7757-79-1	Potassium nitrate	4.5E+08	2.9E+08	6.6E+08
7439-92-1	Lead	1.9E+08	1.5E+08	2.4E+08
56-23-5	Carbon tetrachloride	1.2E+08	1.1E+08	1.4E+08
71-55-6	1,1,1-trichloroethane	1.1E+08	9.3E+07	1.2E+08
79-01-6	Trichloroethylene	1.0E+08	9.0E+07	1.2E+08
7757-82-6	Sodium sulfate	4.0E+07	2.6E+07	5.9E+07
7647-14-5	Sodium chloride	4.0E+07	2.6E+07	5.9E+07
127-18-4	Tetrachloroethylene	2.7E+07	2.3E+07	3.1E+07
7778-80-5	Potassium sulfate	2.0E+07	1.3E+07	2.9E+07
7447-40-7	Potassium chloride	2.0E+07	1.3E+07	2.9E+07
10101-89-0	Sodium phosphate	2.0E+07	1.3E+07	2.9E+07
75-09-2	Methylene chloride	1.4E+07	1.4E+07	1.5E+07
7778-77-0	Potassium phosphate	1.0E+07	6.5E+06	1.5E+07
76131	1,1,2-trichloro-1,2,2-trifluoroethane	9.1E+06	8.5E+06	9.8E+06
10588-01-9	Sodium dichromate	1.0E+06	6.5E+05	1.5E+06
7778-50-9	Potassium dichromate	5.7E+05	3.7E+05	8.4E+05
1330-20-7	Xylene	5.0E+05	4.5E+05	5.5E+05
67-56-1	Methyl alcohol	2.2E+05	2.0E+05	2.5E+05
71363	Butyl alcohol	9.9E+04	9.0E+04	1.1E+05
7440-43-9	Cadmium	6.6E+04	4.9E+04	8.7E+04
7440-41-7	Beryllium	9.0E-02	7.6E-02	1.0E-01
—	Organophosphates	Unknown	NA ^b	NA
—	Versenes	Unknown	NA	NA
—	Organic acids	Unknown	NA	NA
—	Nitrocellulose	Unknown	NA	NA
—	Dibutylethylcarbutol	Unknown	NA	NA
—	Alcohols	Unknown	NA	NA
7697-37-2	Nitric acid	Unknown	NA	NA

Table 3-13a. (continued).

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7439-97-6	Mercury	Unknown	NA	NA
4165-60-0	Nitrobenzene	Unknown	NA	NA
1336363	PCB	Unknown	NA	NA
1309-48-4	Magnesium oxide	Unknown	NA	NA
1304-56-9	Beryllium oxide	Unknown	NA	NA
12057-24-8	Lithium oxide	Unknown	NA	NA

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-13b. Inventory of nonradiological contaminants (listed alphabetically) from the Rocky Flats Plant.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
71-55-6	1,1,1-trichloroethane	1.1E+08	9.3E+07	1.2E+08
76131	1,1,2-trichloro-1,2,2-trifluoroethane	9.1E+06	8.5E+06	9.8E+06
—	Alcohols	Unknown	NA ^b	NA
7440-41-7	Beryllium	9.0E-02	7.6E-02	1.0E-01
1304-56-9	Beryllium oxide	Unknown	NA	NA
71363	Butyl alcohol	9.9E+04	9.0E+04	1.1E+05
7440-43-9	Cadmium	6.6E+04	4.9E+04	8.7E+04
56-23-5	Carbon tetrachloride	1.2E+08	1.1E+08	1.4E+08
—	Dibutylethylcarbutol	Unknown	NA	NA
7439-92-1	Lead	1.9E+08	1.5E+08	2.4E+08
12057-24-8	Lithium oxide	Unknown	NA	NA
1309-48-4	Magnesium oxide	Unknown	NA	NA
7439-97-6	Mercury	Unknown	NA	NA
67-56-1	Methyl alcohol	2.2E+05	2.0E+05	2.5E+05
75-09-2	Methylene chloride	1.4E+07	1.4E+07	1.5E+07
7697-37-2	Nitric acid	Unknown	NA	NA
4165-60-0	Nitrobenzene	Unknown	NA	NA
—	Nitrocellulose	Unknown	NA	NA
—	Organic acids	Unknown	NA	NA
—	Organophosphates	Unknown	NA	NA
1336363	PCB	Unknown	NA	NA
7447-40-7	Potassium chloride	2.0E+07	1.3E+07	2.9E+07
7778-50-9	Potassium dichromate	5.7E+05	3.7E+05	8.4E+05
7757-79-1	Potassium nitrate	4.5E+08	2.9E+08	6.6E+08
7778-77-0	Potassium phosphate	1.0E+07	6.5E+06	1.5E+07
7778-80-5	Potassium sulfate	2.0E+07	1.3E+07	2.9E+07
7647-14-5	Sodium chloride	4.0E+07	2.6E+07	5.9E+07
10588-01-9	Sodium dichromate	1.0E+06	6.5E+05	1.5E+06
7631-99-4	Sodium nitrate	9.0E+08	5.9E+08	1.3E+09

Table 3-13b. (continued).

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
10101-89-0	Sodium phosphate	2.0E+07	1.3E+07	2.9E+07
7757-82-6	Sodium sulfate	4.0E+07	2.6E+07	5.9E+07
127-18-4	Tetrachloroethylene	2.7E+07	2.3E+07	3.1E+07
79-01-6	Trichloroethylene	1.0E+08	9.0E+07	1.2E+08
—	Versenes	Unknown	NA	NA
1330-20-7	Xylene	5.0E+05	4.5E+05	5.5E+05

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-14a. Inventory of radiological contaminants (listed by quantity) from the Rocky Flats Plant (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Pu-241	3.9E+05	62.5	2.8E+05	5.3E+05
Am-241	1.5E+05	24.3	1.1E+05	2.0E+05
Pu-239	6.5E+04	10.4	4.7E+04	8.8E+04
Pu-240	1.4E+04	2.3	1.0E+04	2.0E+04
Pu-238	1.9E+03	0.3	1.4E+03	2.6E+03
Cs-137	2.1E+02	< 0.05	7.4E+01	4.9E+02
Co-60	1.7E+02	< 0.05	6.0E+01	4.0E+02
U-238	8.0E+01	< 0.05	4.0E+01	1.5E+02
U-234	3.8E+01	< 0.05	2.5E+01	5.6E+01
U-235	1.9E+00	< 0.05	1.2E+00	2.9E+00
U-236	1.0E+00	< 0.05	5.6E-01	1.8E+00
Pu-242	8.8E-01	< 0.05	6.3E-01	1.2E+00
U-233	5.4E-01	< 0.05	3.0E-01	9.0E-01
H-3	3.6E-01	< 0.05	1.2E-01	8.3E-01
Ra-226	1.9E-01	< 0.05	6.6E-02	4.4E-01
U-232	1.2E-02	< 0.05	6.8E-03	2.1E-02
Total	6.2E+05	99.8 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-14b. Inventory of radiological contaminants (listed alphabetically) from the Rocky Flats Plant (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Am-241	1.5E+05	24.3	1.1E+05	2.0E+05
Co-60	1.7E+02	< 0.05	6.0E+01	4.0E+02
Cs-137	2.1E+02	< 0.05	7.4E+01	4.9E+02
H-3	3.6E-01	< 0.05	1.2E-01	8.3E-01
Pu-238	1.9E+03	0.3	1.4E+03	2.6E+03
Pu-239	6.5E+04	10.4	4.7E+04	8.8E+04
Pu-240	1.4E+04	2.3	1.0E+04	2.0E+04
Pu-241	3.9E+05	62.5	2.8E+05	5.3E+05
Pu-242	8.8E-01	< 0.05	6.3E-01	1.2E+00
Ra-226	1.9E-01	< 0.05	6.6E-02	4.4E-01
U-232	1.2E-02	< 0.05	6.8E-03	2.1E-02
U-233	5.4E-01	< 0.05	3.0E-01	9.0E-01
U-234	3.8E+01	< 0.05	2.5E+01	5.6E+01
U-235	1.9E+00	< 0.05	1.2E+00	2.9E+00
U-236	1.0E+00	< 0.05	5.6E-01	1.8E+00
U-238	8.0E+01	< 0.05	4.0E+01	1.5E+02
Total	6.2E+05	99.8 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-15a. Inventory of nonradiological contaminants (listed by quantity) from the Central Facilities Area.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7439-92-1	Lead	1.8E+08	1.5E+08	2.3E+08
11135-81-2	Sodium potassium	1.7E+06	1.2E+06	2.4E+06
7440-67-7	Zirconium	1.3E+06	1.2E+06	1.5E+06
7697-37-2	Nitric acid	1.0E+06	6.8E+05	1.4E+06
7664393	Hydrofluoric acid	1.1E+05	7.3E+04	1.5E+05
7440-41-7	Beryllium	5.9E+04	2.3E+04	1.3E+05
7664-93-9	Sulfuric acid	1.5E+04	1.3E+04	1.6E+04
143-33-9	Sodium cyanide	9.4E+02	3.2E+02	2.2E+03
1310-73-2	Sodium hydroxide	1.5E+02	5.1E+01	3.4E+02
—	Cyanide	Unknown	NA ^b	NA
7439-97-6	Mercury	Unknown	NA	NA

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-15b. Inventory of nonradiological contaminants (listed alphabetically) from the Central Facilities Area.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7440-41-7	Beryllium	5.9E+04	2.3E+04	1.3E+05
—	Cyanide	Unknown	NA ^b	NA
7664393	Hydrofluoric acid	1.1E+05	7.3E+04	1.5E+05
7439-92-1	Lead	1.8E+08	1.5E+08	2.3E+08
7439-97-6	Mercury	Unknown	NA	NA
7697-37-2	Nitric acid	1.0E+06	6.8E+05	1.4E+06
143-33-9	Sodium cyanide	9.4E+02	3.2E+02	2.2E+03
1310-73-2	Sodium hydroxide	1.5E+02	5.1E+01	3.4E+02
11135-81-2	Sodium potassium	1.7E+06	1.2E+06	2.4E+06
7664-93-9	Sulfuric acid	1.5E+04	1.3E+04	1.6E+04
7440-67-7	Zirconium	1.3E+06	1.2E+06	1.5E+06

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-16a. Inventory of nonradiological contaminants (listed by quantity) from offsite generators not otherwise specified.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7439-92-1	Lead	1.9E+07	1.6E+07	2.3E+07
7439-95-4	Magnesium	9.0E+06	7.4E+06	1.1E+07
7697-37-2	Nitric acid	7.0E+05	1.5E+05	2.1E+06
7790-86-5	Cerium chloride	5.1E+05	4.2E+05	6.2E+05
50-00-0	Formaldehyde	1.4E+05	1.3E+05	1.5E+05
7783-40-6	Magnesium fluoride	1.4E+05	1.3E+05	1.4E+05
120-12-7	Anthracene	2.0E+02	7.0E+01	4.6E+02
7631-99-4	Sodium nitrate	Unknown	NA ^b	NA
7580-67-8	Lithium hydride	Unknown	NA	NA
7440-41-7	Beryllium	Unknown	NA	NA
7440-23-5	Sodium	Unknown	NA	NA
7439-97-6	Mercury	Unknown	NA	NA
7439-96-5	Manganese	Unknown	NA	NA
71-43-2	Benzene	Unknown	NA	NA
67-56-1	Methyl alcohol	Unknown	NA	NA
64175	Ethyl alcohol	Unknown	NA	NA
56-49-5	3-methylcholanthrene	Unknown	NA	NA
56-23-5	Carbon tetrachloride	Unknown	NA	NA
55914	Diisopropylfluorophosphate	Unknown	NA	NA
1806-34-4	1,4-bis(5-phenyloxazol-2-YL)benzene	Unknown	NA	NA
1332-21-4	Asbestos	Unknown	NA	NA
1304-56-9	Beryllium oxide	Unknown	NA	NA
11135-81-2	Sodium potassium	Unknown	NA	NA
108-88-3	Toluene	Unknown	NA	NA

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-16b. Inventory of nonradiological contaminants (listed alphabetically) from offsite generators not otherwise specified.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
1806-34-4	1,4-bis(5-phenyloxazol-2-YL)benzene	Unknown	NA ^b	NA
56-49-5	3-methylcholanthrene	Unknown	NA	NA
120-12-7	Anthracene	2.0E+02	7.0E+01	4.6E+02
1332-21-4	Asbestos	Unknown	NA	NA
71-43-2	Benzene	Unknown	NA	NA
7440-41-7	Beryllium	Unknown	NA	NA
1304-56-9	Beryllium oxide	Unknown	NA	NA
56-23-5	Carbon tetrachloride	Unknown	NA	NA
7790-86-5	Cerium chloride	5.1E+05	4.2E+05	6.2E+05
55914	Diisopropylfluorophosphate	Unknown	NA	NA
64175	Ethyl alcohol	Unknown	NA	NA
50-00-0	Formaldehyde	1.4E+05	1.3E+05	1.5E+05
7439-92-1	Lead	1.9E+07	1.6E+07	2.3E+07
7580-67-8	Lithium hydride	Unknown	NA	NA
7439-95-4	Magnesium	9.0E+06	7.4E+06	1.1E+07
7783-40-6	Magnesium fluoride	1.4E+05	1.3E+05	1.4E+05
7439-96-5	Manganese	Unknown	NA	NA
7439-97-6	Mercury	Unknown	NA	NA
67-56-1	Methyl alcohol	Unknown	NA	NA
7697-37-2	Nitric acid	7.0E+05	1.5E+05	2.1E+06
7440-23-5	Sodium	Unknown	NA	NA
7631-99-4	Sodium nitrate	Unknown	NA	NA
11135-81-2	Sodium potassium	Unknown	NA	NA
108-88-3	Toluene	Unknown	NA	NA

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-17a. Inventory of nonradiological contaminants (listed by quantity) from the Power Excursion Reactor.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7439-92-1	Lead	2.1E+06	1.8E+06	2.5E+06
79-01-6	Trichloroethylene	4.1E+05	3.3E+05	5.0E+05
1330-20-7	Xylene	3.5E+05	2.4E+05	5.0E+05
71-55-6	1,1,1-trichloroethane	2.2E+05	1.6E+05	3.0E+05
108-88-3	Toluene	1.9E+05	1.3E+05	2.6E+05
67-64-1	Acetone	9.2E+04	7.6E+04	1.1E+05
78-93-3	2-butanone	3.2E+04	2.5E+04	4.0E+04
7440-43-9	Cadmium	1.5E+04	8.2E+03	2.6E+04
1332-21-4	Asbestos	1.1E+04	9.0E+03	1.4E+04
7440-22-4	Silver	5.9E+03	4.7E+03	7.3E+03
302012	Hydrazine	1.8E+03	1.3E+03	2.3E+03
7440-47-3	Chromium	4.5E+02	3.4E+02	5.9E+02
7440-36-0	Antimony	4.5E+02	1.6E+02	1.0E+03

a. CAS—Chemical Abstract Services.

Table 3-17b. Inventory of nonradiological contaminants (listed alphabetically) from the Power Excursion Reactor.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
71-55-6	1,1,1-trichloroethane	2.2E+05	1.6E+05	3.0E+05
78-93-3	2-butanone	3.2E+04	2.5E+04	4.0E+04
67-64-1	Acetone	9.2E+04	7.6E+04	1.1E+05
7440-36-0	Antimony	4.5E+02	1.6E+02	1.0E+03
1332-21-4	Asbestos	1.1E+04	9.0E+03	1.4E+04
7440-43-9	Cadmium	1.5E+04	8.2E+03	2.6E+04
7440-47-3	Chromium	4.5E+02	3.4E+02	5.9E+02
302012	Hydrazine	1.8E+03	1.3E+03	2.3E+03
7439-92-1	Lead	2.1E+06	1.8E+06	2.5E+06
7440-22-4	Silver	5.9E+03	4.7E+03	7.3E+03
108-88-3	Toluene	1.9E+05	1.3E+05	2.6E+05
79-01-6	Trichloroethylene	4.1E+05	3.3E+05	5.0E+05
1330-20-7	Xylene	3.5E+05	2.4E+05	5.0E+05

a. CAS—Chemical Abstract Services.

Table 3-18a. Inventory of nonradiological contaminants (listed by quantity) disposed of on Pad A.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7757-79-1	Potassium nitrate	1.4E+09	9.2E+08	2.0E+09
7631-99-4	Sodium nitrate	2.7E+08	1.8E+08	3.9E+08
7757-82-6	Sodium sulfate	1.2E+08	8.2E+07	1.7E+08
7647-14-5	Sodium chloride	1.2E+08	8.2E+07	1.7E+08
7778-80-5	Potassium sulfate	6.0E+07	4.1E+07	8.6E+07
7447-40-7	Potassium chloride	6.0E+07	4.1E+07	8.6E+07
10101-89-0	Sodium phosphate	6.0E+07	4.1E+07	8.6E+07
7778-77-0	Potassium phosphate	3.0E+07	2.1E+07	4.4E+07
10588-01-9	Sodium dichromate	3.1E+06	2.1E+06	4.4E+06
7778-50-9	Potassium dichromate	1.7E+06	1.1E+06	2.4E+06
7440-41-7	Beryllium	Unknown	NA ^b	NA

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-18b. Inventory of nonradiological contaminants (listed alphabetically) disposed of on Pad A.

CAS number ^a	Chemical	Best estimate (g)	Lower bound	Upper bound
7440-41-7	Beryllium	Unknown	NA ^b	NA
7447-40-7	Potassium chloride	6.0E+07	4.1E+07	8.6E+07
7778-50-9	Potassium dichromate	1.7E+06	1.1E+06	2.4E+06
7757-79-1	Potassium nitrate	1.4E+09	9.2E+08	2.0E+09
7778-77-0	Potassium phosphate	3.0E+07	2.1E+07	4.4E+07
7778-80-5	Potassium sulfate	6.0E+07	4.1E+07	8.6E+07
7647-14-5	Sodium chloride	1.2E+08	8.2E+07	1.7E+08
10588-01-9	Sodium dichromate	3.1E+06	2.1E+06	4.4E+06
7631-99-4	Sodium nitrate	2.7E+08	1.8E+08	3.9E+08
10101-89-0	Sodium phosphate	6.0E+07	4.1E+07	8.6E+07
7757-82-6	Sodium sulfate	1.2E+08	8.2E+07	1.7E+08

a. CAS—Chemical Abstract Services.

b. NA—not applicable.

Table 3-19a. Inventory of radiological contaminants (listed by quantity) from Argonne National Laboratory-East (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Sr-90	2.9E+02	61.2	5.8E+00	1.8E+03
Mn-54	1.1E+02	23.3	2.2E+00	6.9E+02
Co-60	5.8E+01	12.3	1.6E+01	1.6E+02
H-3	5.2E+00	1.1	1.0E-01	3.3E+01
Co-57	4.8E+00	1.0	9.6E-02	3.0E+01
U-238	1.3E+00	0.3	1.0E+00	1.7E+00
Ra-226	9.9E-01	0.2	7.7E-01	1.3E+00
Zn-65	6.2E-01	0.1	1.2E-02	3.9E+00
U-234	5.3E-01	0.1	4.1E-01	6.7E-01
Be-7	3.5E-01	0.1	7.1E-03	2.2E+00
Pu-240	2.4E-01	<0.05	4.7E-03	1.5E+00
Cd-109	1.9E-01	<0.05	3.9E-03	1.2E+00
Pu-239	1.8E-01	<0.05	3.6E-03	1.1E+00
Cr-51	1.2E-01	<0.05	2.4E-03	7.5E-01
Na-22	8.5E-02	<0.05	1.7E-03	5.4E-01
Fe-59	7.4E-02	<0.05	1.5E-03	4.7E-01
Zr-95	6.0E-02	<0.05	1.2E-03	3.8E-01
U-235	3.8E-02	<0.05	2.9E-02	4.8E-02
I-125	2.9E-02	<0.05	5.9E-04	1.8E-01
S-35	2.6E-02	<0.05	5.1E-04	1.6E-01
Y-88	2.5E-02	<0.05	5.0E-04	1.6E-01
Sc-46	2.5E-02	<0.05	5.0E-04	1.6E-01
Sc-44	2.5E-02	<0.05	5.0E-04	1.6E-01
Am-241	2.3E-02	<0.05	4.7E-04	1.5E-01
Ag-110	1.2E-02	<0.05	2.5E-04	7.9E-02
Eu-152	5.7E-03	<0.05	1.1E-04	3.6E-02
Cs-137	3.8E-03	<0.05	1.0E-03	1.0E-02
C-14	1.6E-03	<0.05	3.2E-05	1.0E-02
Ru-106	1.0E-03	<0.05	2.0E-05	6.3E-03

Table 3-19a. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Mn-53	1.0E-03	< 0.05	2.0E-05	6.3E-03
Cm-244	9.8E-04	< 0.05	2.0E-05	6.2E-03
Eu-154	9.5E-04	< 0.05	1.9E-05	6.0E-03
Np-237	8.5E-04	< 0.05	1.7E-05	5.4E-03
Co-58	3.3E-04	< 0.05	6.6E-06	2.1E-03
Th-232	3.1E-04	< 0.05	2.4E-04	4.0E-04
Cs-134	3.0E-04	< 0.05	6.1E-06	1.9E-03
Ni-63	2.5E-04	< 0.05	6.7E-05	6.7E-04
U-233	4.2E-05	< 0.05	3.2E-05	5.3E-05
Pu-238	3.0E-05	< 0.05	6.1E-07	1.9E-04
Pb-212	2.0E-05	< 0.05	4.0E-07	1.3E-04
Pu-242	1.4E-05	< 0.05	2.9E-07	9.1E-05
Am-243	9.2E-06	< 0.05	1.8E-07	5.8E-05
Pb-210	9.1E-06	< 0.05	1.8E-07	5.7E-05
Ce-144	8.0E-06	< 0.05	1.6E-07	5.0E-05
Tc-99	2.0E-06	< 0.05	4.0E-08	1.3E-05
Ru-103	2.0E-06	< 0.05	4.0E-08	1.3E-05
Ra-225	2.0E-06	< 0.05	1.5E-06	2.5E-06
Rn-222	1.0E-06	< 0.05	2.0E-08	6.3E-06
Cd-104	1.5E-07	< 0.05	3.0E-09	9.5E-07
Total	4.7E+02	99.7 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-19b. Inventory of radiological contaminants (listed alphabetically) from Argonne National Laboratory-East (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Ag-110	1.2E-02	< 0.05	2.5E-04	7.9E-02
Am-241	2.3E-02	< 0.05	4.7E-04	1.5E-01
Am-243	9.2E-06	< 0.05	1.8E-07	5.8E-05
Be-7	3.5E-01	0.1	7.1E-03	2.2E+00
C-14	1.6E-03	< 0.05	3.2E-05	1.0E-02
Cd-104	1.5E-07	< 0.05	3.0E-09	9.5E-07
Cd-109	1.9E-01	< 0.05	3.9E-03	1.2E+00
Ce-144	8.0E-06	< 0.05	1.6E-07	5.0E-05
Cm-244	9.8E-04	< 0.05	2.0E-05	6.2E-03
Co-57	4.8E+00	1.0	9.6E-02	3.0E+01
Co-58	3.3E-04	< 0.05	6.6E-06	2.1E-03
Co-60	5.8E+01	12.3	1.6E+01	1.6E+02
Cr-51	1.2E-01	< 0.05	2.4E-03	7.5E-01
Cs-134	3.0E-04	< 0.05	6.1E-06	1.9E-03
Cs-137	3.8E-03	< 0.05	1.0E-03	1.0E-02
Eu-152	5.7E-03	< 0.05	1.1E-04	3.6E-02
Eu-154	9.5E-04	< 0.05	1.9E-05	6.0E-03
Fe-59	7.4E-02	< 0.05	1.5E-03	4.7E-01
H-3	5.2E+00	1.1	1.0E-01	3.3E+01
I-125	2.9E-02	< 0.05	5.9E-04	1.8E-01
Mn-53	1.0E-03	< 0.05	2.0E-05	6.3E-03
Mn-54	1.1E+02	23.3	2.2E+00	6.9E+02
Na-22	8.5E-02	< 0.05	1.7E-03	5.4E-01
Ni-63	2.5E-04	< 0.05	6.7E-05	6.7E-04
Np-237	8.5E-04	< 0.05	1.7E-05	5.4E-03
Pb-210	9.1E-06	< 0.05	1.8E-07	5.7E-05
Pb-212	2.0E-05	< 0.05	4.0E-07	1.3E-04
Pu-238	3.0E-05	< 0.05	6.1E-07	1.9E-04
Pu-239	1.8E-01	< 0.05	3.6E-03	1.1E+00

Table 3-19b. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Pu-240	2.4E-01	<0.05	4.7E-03	1.5E+00
Pu-242	1.4E-05	<0.05	2.9E-07	9.1E-05
Ra-225	2.0E-06	<0.05	1.5E-06	2.5E-06
Ra-226	9.9E-01	0.2	7.7E-01	1.3E+00
Rn-222	1.0E-06	<0.05	2.0E-08	6.3E-06
Ru-103	2.0E-06	<0.05	4.0E-08	1.3E-05
Ru-106	1.0E-03	<0.05	2.0E-05	6.3E-03
S-35	2.6E-02	<0.05	5.1E-04	1.6E-01
Sc-44	2.5E-02	<0.05	5.0E-04	1.6E-01
Sc-46	2.5E-02	<0.05	5.0E-04	1.6E-01
Sr-90	2.9E+02	61.2	5.8E+00	1.8E+03
Tc-99	2.0E-06	<0.05	4.0E-08	1.3E-05
Th-232	3.1E-04	<0.05	2.4E-04	4.0E-04
U-233	4.2E-05	<0.05	3.2E-05	5.3E-05
U-234	5.3E-01	0.1	4.1E-01	6.7E-01
U-235	3.8E-02	<0.05	2.9E-02	4.8E-02
U-238	1.3E+00	0.3	1.0E+00	1.7E+00
Y-88	2.5E-02	<0.05	5.0E-04	1.6E-01
Zn-65	6.2E-01	0.1	1.2E-02	3.9E+00
Zr-95	6.0E-02	<0.05	1.2E-03	3.8E-01
Total	4.7E+02	99.7 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-20a. Inventory of radiological contaminants (listed by quantity) from the Auxiliary Reactor Area (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Sr-90	3.4E+03	53.3	5.2E+02	1.2E+04
Cs-137	2.4E+03	36.9	1.5E+03	3.5E+03
Co-60	2.7E+02	4.2	1.5E+02	4.5E+02
Cr-51	1.6E+02	2.5	1.6E+00	1.1E+03
Ni-59	1.2E+02	1.8	5.5E-01	8.4E+02
Fe-59	8.0E+01	1.2	7.8E-01	5.6E+02
U-238	1.6E+00	<0.05	1.3E+00	2.1E+00
Ag-110	8.3E-01	<0.05	4.4E-03	6.0E+00
Nb-95	7.1E-01	<0.05	5.5E-03	5.0E+00
U-234	6.4E-01	<0.05	4.9E-01	8.1E-01
Zr-95	6.1E-01	<0.05	3.8E-03	4.4E+00
U-233	6.0E-01	<0.05	3.6E-01	9.5E-01
Ce-141	2.1E-01	<0.05	1.0E-03	1.5E+00
Eu-154	2.0E-01	<0.05	9.6E-04	1.4E+00
Eu-152	2.0E-01	<0.05	9.6E-04	1.4E+00
Cs-134	1.9E-01	<0.05	9.1E-04	1.4E+00
Ce-144	1.3E-01	<0.05	6.2E-04	9.5E-01
U-235	2.3E-02	<0.05	1.0E-02	4.4E-02
Pu-239	6.8E-03	<0.05	3.8E-04	3.4E-02
Am-241	1.0E-05	<0.05	4.8E-08	7.3E-05
Total	6.5E+03	99.9 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-20b. Inventory of radiological contaminants (listed alphabetically) from the Auxiliary Reactor Area (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Ag-110	8.3E-01	<0.05	4.4E-03	6.0E+00
Am-241	1.0E-05	<0.05	4.8E-08	7.3E-05
Ce-141	2.1E-01	<0.05	1.0E-03	1.5E+00
Ce-144	1.3E-01	<0.05	6.2E-04	9.5E-01
Co-60	2.7E+02	4.2	1.5E+02	4.5E+02
Cr-51	1.6E+02	2.5	1.6E+00	1.1E+03
Cs-134	1.9E-01	<0.05	9.1E-04	1.4E+00
Cs-137	2.4E+03	36.9	1.5E+03	3.5E+03
Eu-152	2.0E-01	<0.05	9.6E-04	1.4E+00
Eu-154	2.0E-01	<0.05	9.6E-04	1.4E+00
Fe-59	8.0E+01	1.2	7.8E-01	5.6E+02
Nb-95	7.1E-01	<0.05	5.5E-03	5.0E+00
Ni-59	1.2E+02	1.8	5.5E-01	8.4E+02
Pu-239	6.8E-03	<0.05	3.8E-04	3.4E-02
Sr-90	3.4E+03	53.3	5.2E+02	1.2E+04
U-233	6.0E-01	<0.05	3.6E-01	9.5E-01
U-234	6.4E-01	<0.05	4.9E-01	8.1E-01
U-235	2.3E-02	<0.05	1.0E-02	4.4E-02
U-238	1.6E+00	<0.05	1.3E+00	2.1E+00
Zr-95	6.1E-01	<0.05	3.8E-03	4.4E+00
Total	6.5E+03	99.9 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-21a. Inventory of radiological contaminants (listed by quantity) from Battelle Northwest Laboratories (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
H-3	1.8E-01	93.5	8.5E-04	1.3E+00
Co-60	1.2E-02	6.5	1.1E-03	5.3E-02
C-14	5.0E-06	<0.05	2.4E-08	3.6E-05
Am-241	1.2E-06	<0.05	5.8E-09	8.7E-06
U-238	2.0E-09	<0.05	1.2E-09	3.2E-09
Total	1.9E-01	100.0		

Table 3-21b. Inventory of radiological contaminants (listed alphabetically) from Battelle Northwest Laboratories (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Am-241	1.2E-06	<0.05	5.8E-09	8.7E-06
C-14	5.0E-06	<0.05	2.4E-08	3.6E-05
Co-60	1.2E-02	6.5	1.1E-03	5.3E-02
H-3	1.8E-01	93.5	8.5E-04	1.3E+00
U-238	2.0E-09	<0.05	1.2E-09	3.2E-09
Total	1.9E-01	100.0		

Table 3-22a. Inventory of radiological contaminants (listed by quantity) from Central Facilities Area (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Co-60	1.7E+02	59.9	6.1E+01	3.9E+02
Sr-90	6.8E+01	23.4	4.5E+00	3.2E+02
Cs-137	4.7E+01	16.4	2.6E+01	7.9E+01
Fe-59	3.5E-01	0.1	1.9E-03	2.5E+00
U-238	3.5E-01	0.1	2.3E-01	5.2E-01
U-234	1.7E-01	0.1	1.0E-01	2.8E-01
Ra-226	3.8E-02	< 0.05	3.4E-02	4.2E-02
U-235	2.0E-02	< 0.05	1.3E-02	2.9E-02
Mn-54	2.9E-03	< 0.05	3.2E-04	1.2E-02
Ru-103	1.2E-03	< 0.05	1.4E-04	5.0E-03
Pu-240	1.0E-03	< 0.05	1.1E-04	4.0E-03
P-32	1.0E-03	< 0.05	5.1E-06	7.3E-03
Ba-133	5.4E-04	< 0.05	2.8E-06	3.9E-03
I-131	1.4E-04	< 0.05	1.6E-05	5.7E-04
Sr-85	1.0E-04	< 0.05	1.1E-05	4.0E-04
Cs-134	3.3E-05	< 0.05	3.6E-06	1.3E-04
Total	2.9E+02	100.0		

Table 3-22b. Inventory of radiological contaminants (listed alphabetically) from Central Facilities Area (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Ba-133	5.4E-04	<0.05	2.8E-06	3.9E-03
Co-60	1.7E+02	59.9	6.1E+01	3.9E+02
Cs-134	3.3E-05	<0.05	3.6E-06	1.3E-04
Cs-137	4.7E+01	16.4	2.6E+01	7.9E+01
Fe-59	3.5E-01	0.1	1.9E-03	2.5E+00
I-131	1.4E-04	<0.05	1.6E-05	5.7E-04
Mn-54	2.9E-03	<0.05	3.2E-04	1.2E-02
P-32	1.0E-03	<0.05	5.1E-06	7.3E-03
Pu-240	1.0E-03	<0.05	1.1E-04	4.0E-03
Ra-226	3.8E-02	<0.05	3.4E-02	4.2E-02
Ru-103	1.2E-03	<0.05	1.4E-04	5.0E-03
Sr-85	1.0E-04	<0.05	1.1E-05	4.0E-04
Sr-90	6.8E+01	23.4	4.5E+00	3.2E+02
U-234	1.7E-01	0.1	1.0E-01	2.8E-01
U-235	2.0E-02	<0.05	1.3E-02	2.9E-02
U-238	<u>3.5E-01</u>	<u>0.1</u>	<u>2.3E-01</u>	<u>5.2E-01</u>
Total	2.9E+02	100.0		

Table 3-23a. Inventory of radiological contaminants (listed by quantity) from decontamination and decommissioning (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
H-3	3.3E+03	58.0	1.6E+01	2.4E+04
Co-60	1.6E+03	27.6	1.5E+02	6.7E+03
Ni-63	6.7E+02	11.8	6.0E+01	2.9E+03
Cs-137	6.2E+01	1.1	1.2E+01	2.0E+02
Fe-55	6.1E+01	1.1	5.5E+00	2.6E+02
Sr-90	1.3E+01	0.2	3.0E-01	8.4E+01
Ni-59	4.0E+00	0.1	1.9E-02	2.9E+01
Nb-94	2.0E+00	< 0.05	9.6E-03	1.4E+01
Cs-134	8.1E-02	< 0.05	7.9E-04	5.6E-01
Co-58	2.2E-02	< 0.05	2.1E-04	1.5E-01
Pu-238	1.3E-03	< 0.05	3.4E-05	8.0E-03
U-235	1.9E-04	< 0.05	1.4E-04	2.6E-04
Eu-152	1.8E-05	< 0.05	4.5E-07	1.1E-04
Eu-155	7.3E-06	< 0.05	1.8E-07	4.4E-05
Am-241	5.8E-07	< 0.05	1.5E-08	3.5E-06
Total	5.7E+03	99.9 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-23b. Inventory of radiological contaminants (listed alphabetically) from decontamination and decommissioning (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Am-241	5.8E-07	< 0.05	1.5E-08	3.5E-06
Co-58	2.2E-02	< 0.05	2.1E-04	1.5E-01
Co-60	1.6E+03	27.6	1.5E+02	6.7E+03
Cs-134	8.1E-02	< 0.05	7.9E-04	5.6E-01
Cs-137	6.2E+01	1.1	1.2E+01	2.0E+02
Eu-152	1.8E-05	< 0.05	4.5E-07	1.1E-04
Eu-155	7.3E-06	< 0.05	1.8E-07	4.4E-05
Fe-55	6.1E+01	1.1	5.5E+00	2.6E+02
H-3	3.3E+03	58.0	1.6E+01	2.4E+04
Nb-94	2.0E+00	< 0.05	9.6E-03	1.4E+01
Ni-59	4.0E+00	0.1	1.9E-02	2.9E+01
Ni-63	6.7E+02	11.8	6.0E+01	2.9E+03
Pu-238	1.3E-03	< 0.05	3.4E-05	8.0E-03
Sr-90	1.3E+01	0.2	3.0E-01	8.4E+01
U-235	1.9E-04	< 0.05	1.4E-04	2.6E-04
Total	5.7E+03	99.9 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-24a. Inventory of radiological contaminants (listed by quantity) from the Loss-of-Fluid Test Reactor (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Co-60	1.6E-03	50.0	2.1E-04	6.0E-03
Co-58	<u>1.6E-03</u>	<u>50.0</u>	8.5E-06	1.2E-02
Total	3.2E-03	100.0		

Table 3-24b. Inventory of radiological contaminants (listed alphabetically) from the Loss-of-Fluid Test Reactor (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Co-58	1.6E-03	50.0	8.5E-06	1.2E-02
Co-60	<u>1.6E-03</u>	<u>50.0</u>	2.1E-04	6.0E-03
Total	3.2E-03	100.0		

Table 3-25a. Inventory of radiological contaminants (listed by quantity) from offsite generators not otherwise specified (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Cs-137	2.2E+04	61.4	5.0E+03	6.6E+04
H-3	5.7E+03	15.6	5.6E+01	3.9E+04
Sr-90	2.4E+03	6.6	7.0E+01	1.4E+04
Co-60	2.0E+03	5.6	7.7E+02	4.4E+03
Fe-59	1.4E+03	3.8	3.7E+01	8.3E+03
Co-58	5.6E+02	1.5	8.4E+00	3.7E+03
Pu-239	5.0E+02	1.4	6.0E+00	3.4E+03
Pu-240	4.5E+02	1.2	4.4E+00	3.1E+03
Ni-59	3.5E+02	1.0	5.4E+00	2.3E+03
Zr-95	2.9E+02	0.8	2.8E+00	2.0E+03
Cr-51	1.8E+02	0.5	2.7E+00	1.2E+03
Ra-226	5.4E+01	0.1	4.0E+01	7.2E+01
Ir-192	5.4E+01	0.1	1.4E+00	3.2E+02
Po-210	5.2E+01	0.1	5.1E-01	3.6E+02
U-234	8.0E+00	<0.05	6.6E+00	9.7E+00
Tm-170	3.4E+00	<0.05	1.6E-02	2.4E+01
Sb-124	3.4E+00	<0.05	1.6E-02	2.4E+01
Ba-137m	3.4E+00	<0.05	1.6E-02	2.4E+01
U-238	2.7E+00	<0.05	2.2E+00	3.2E+00
Sc-46	1.5E+00	<0.05	1.5E-02	1.0E+01
Y-90	1.5E+00	<0.05	1.0E-02	1.1E+01
Kr-85	1.3E+00	<0.05	6.2E-03	9.5E+00
Th-232	1.3E+00	<0.05	1.0E+00	1.6E+00
Ru-106	1.2E+00	<0.05	1.7E-02	8.1E+00
Fe-55	1.0E+00	<0.05	2.3E-01	3.0E+00
Mo-99	1.0E+00	<0.05	1.5E-02	6.6E+00
Be-10	9.5E-01	<0.05	9.3E-03	6.6E+00
Ce-144	9.0E-01	<0.05	4.3E-03	6.6E+00
C-14	6.7E-01	<0.05	1.7E-02	4.0E+00

Table 3-25a. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
U-235	4.8E-01	<0.05	4.1E-01	5.6E-01
Y-91	3.1E-01	<0.05	3.1E-03	2.2E+00
Cl-36	3.1E-01	<0.05	3.1E-03	2.2E+00
Pm-147	2.3E-01	<0.05	2.5E-03	1.6E+00
Na-22	2.2E-01	<0.05	2.1E-03	1.5E+00
Cd-109	2.2E-01	<0.05	2.1E-03	1.5E+00
P-32	9.2E-02	<0.05	1.4E-03	6.0E-01
S-35	6.3E-02	<0.05	6.3E-04	4.3E-01
I-131	5.0E-02	<0.05	6.2E-04	3.4E-01
Sr-85	2.9E-02	<0.05	1.5E-04	2.1E-01
Zn-65	1.3E-02	<0.05	6.8E-05	9.2E-02
Hg-203	1.2E-02	<0.05	5.8E-05	8.7E-02
Cf-252	1.0E-02	<0.05	9.8E-05	6.9E-02
Yb-164	7.6E-03	<0.05	7.4E-05	5.3E-02
Er-169	7.6E-03	<0.05	7.4E-05	5.3E-02
Tl-204	6.7E-04	<0.05	3.2E-06	4.8E-03
Rb-86	6.7E-04	<0.05	3.2E-06	4.8E-03
Ca-45	6.7E-04	<0.05	3.2E-06	4.8E-03
Sr-89	Unknown	<0.05	NA ^a	NA
Total	3.6E+04			99.7 ^b

a. NA—not applicable.

b. Total in table does not equal 100.0% due to round off.

Table 3-25b. Inventory of radiological contaminants (listed alphabetically) from offsite generators not otherwise specified (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Ba-137m	3.4E+00	< 0.05	1.6E-02	2.4E+01
Be-10	9.5E-01	< 0.05	9.3E-03	6.6E+00
C-14	6.7E-01	< 0.05	1.7E-02	4.0E+00
Ca-45	6.7E-04	< 0.05	3.2E-06	4.8E-03
Cd-109	2.2E-01	< 0.05	2.1E-03	1.5E+00
Ce-144	9.0E-01	< 0.05	4.3E-03	6.6E+00
Cf-252	1.0E-02	< 0.05	9.8E-05	6.9E-02
Cl-36	3.1E-01	< 0.05	3.1E-03	2.2E+00
Co-58	5.6E+02	1.5	8.4E+00	3.7E+03
Co-60	2.0E+03	5.6	7.7E+02	4.4E+03
Cr-51	1.8E+02	0.5	2.7E+00	1.2E+03
Cs-137	2.2E+04	61.4	5.0E+03	6.6E+04
Er-169	7.6E-03	< 0.05	7.4E-05	5.3E-02
Fe-55	1.0E+00	< 0.05	2.3E-01	3.0E+00
Fe-59	1.4E+03	3.8	3.7E+01	8.3E+03
H-3	5.7E+03	15.6	5.6E+01	3.9E+04
Hg-203	1.2E-02	< 0.05	5.8E-05	8.7E-02
I-131	5.0E-02	< 0.05	6.2E-04	3.4E-01
Ir-192	5.4E+01	0.1	1.4E+00	3.2E+02
Kr-85	1.3E+00	< 0.05	6.2E-03	9.5E+00
Mo-99	1.0E+00	< 0.05	1.5E-02	6.6E+00
Na-22	2.2E-01	< 0.05	2.1E-03	1.5E+00
Ni-59	3.5E+02	1.0	5.4E+00	2.3E+03
P-32	9.2E-02	< 0.05	1.4E-03	6.0E-01
Pm-147	2.3E-01	< 0.05	2.5E-03	1.6E+00
Po-210	5.2E+01	0.1	5.1E-01	3.6E+02
Pu-239	5.0E+02	1.4	6.0E+00	3.4E+03
Pu-240	4.5E+02	1.2	4.4E+00	3.1E+03
Ra-226	5.4E+01	0.1	4.0E+01	7.2E+01

Table 3-25b. (continued).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Rb-86	6.7E-04	<0.05	3.2E-06	4.8E-03
Ru-106	1.2E+00	<0.05	1.7E-02	8.1E+00
S-35	6.3E-02	<0.05	6.3E-04	4.3E-01
Sb-124	3.4E+00	<0.05	1.6E-02	2.4E+01
Sc-46	1.5E+00	<0.05	1.5E-02	1.0E+01
Sr-85	2.9E-02	<0.05	1.5E-04	2.1E-01
Sr-89	Unknown	<0.05	NA ^a	NA
Sr-90	2.4E+03	6.6	7.0E+01	1.4E+04
Th-232	1.3E+00	<0.05	1.0E+00	1.6E+00
Tl-204	6.7E-04	<0.05	3.2E-06	4.8E-03
Tm-170	3.4E+00	<0.05	1.6E-02	2.4E+01
U-234	8.0E+00	<0.05	6.6E+00	9.7E+00
U-235	4.8E-01	<0.05	4.1E-01	5.6E-01
U-238	2.7E+00	<0.05	2.2E+00	3.2E+00
Y-90	1.5E+00	<0.05	1.0E-02	1.1E+01
Y-91	3.1E-01	<0.05	3.1E-03	2.2E+00
Yb-164	7.6E-03	<0.05	7.4E-05	5.3E-02
Zn-65	1.3E-02	<0.05	6.8E-05	9.2E-02
Zr-95	2.9E+02	0.8	2.8E+00	2.0E+03
Total	3.6E+04	99.7 ^b		

a. NA—not applicable.

b. Total in table does not equal 100.0% due to round off.

Table 3-26a. Inventory of radiological contaminants (listed by quantity) from the Power Excursion Reactor (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Cs-137	9.7E+01	44.9	5.3E+01	1.6E+02
Be-10	3.8E+01	17.4	1.9E-01	2.7E+02
Sb-124	3.8E+01	17.4	1.9E-01	2.7E+02
Sr-90	2.3E+01	10.5	9.0E-01	1.2E+02
Co-60	2.1E+01	9.7	1.2E+01	3.3E+01
Ra-226	2.3E-01	0.1	1.4E-01	3.6E-01
U-238	1.2E-02	<0.05	1.0E-02	1.4E-02
U-235	3.7E-03	<0.05	3.2E-03	4.2E-03
Pu-239	5.0E-09	<0.05	2.0E-11	3.6E-08
Pu-238	5.0E-09	<0.05	2.0E-11	3.6E-08
Total	2.2E+02	100.0		

Table 3-26b. Inventory of radiological contaminants (listed alphabetically) from the Power Excursion Reactor (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Be-10	3.8E+01	17.4	1.9E-01	2.7E+02
Co-60	2.1E+01	9.7	1.2E+01	3.3E+01
Cs-137	9.7E+01	44.9	5.3E+01	1.6E+02
Pu-238	5.0E-09	<0.05	2.0E-11	3.6E-08
Pu-239	5.0E-09	<0.05	2.0E-11	3.6E-08
Ra-226	2.3E-01	0.1	1.4E-01	3.6E-01
Sb-124	3.8E+01	17.4	1.9E-01	2.7E+02
Sr-90	2.3E+01	10.5	9.0E-01	1.2E+02
U-235	3.7E-03	<0.05	3.2E-03	4.2E-03
U-238	1.2E-02	<0.05	1.0E-02	1.4E-02
Total	2.2E+02	100.0		

Table 3-27a. Inventory of radiological contaminants (listed by quantity) from the Radioactive Waste Management Complex (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Sr-90	4.8E+00	78.8	1.5E-01	2.8E+01
Cs-137	1.2E+00	20.0	4.1E-01	2.8E+00
Th-230	1.8E-02	0.3	1.4E-02	2.2E-02
U-238	1.8E-02	0.3	1.4E-02	2.2E-02
Ra-226	1.7E-02	0.3	1.4E-02	2.1E-02
U-234	1.7E-02	0.3	1.4E-02	2.1E-02
U-235	9.1E-04	< 0.05	7.4E-04	1.1E-03
Co-60	4.1E-04	< 0.05	1.4E-04	9.6E-04
Fe-59	3.9E-04	< 0.05	1.2E-05	2.3E-03
Th-232	3.4E-04	< 0.05	2.8E-04	4.1E-04
Total	6.1E+00	100.0		

Table 3-27b. Inventory of radiological contaminants (listed alphabetically) from the Radioactive Waste Management Complex (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Co-60	4.1E-04	< 0.05	1.4E-04	9.6E-04
Cs-137	1.2E+00	20.0	4.1E-01	2.8E+00
Fe-59	3.9E-04	< 0.05	1.2E-05	2.3E-03
Ra-226	1.7E-02	0.3	1.4E-02	2.1E-02
Sr-90	4.8E+00	78.8	1.5E-01	2.8E+01
Th-230	1.8E-02	0.3	1.4E-02	2.2E-02
Th-232	3.4E-04	< 0.05	2.8E-04	4.1E-04
U-234	1.7E-02	0.3	1.4E-02	2.1E-02
U-235	9.1E-04	< 0.05	7.4E-04	1.1E-03
U-238	1.8E-02	0.3	1.4E-02	2.2E-02
Total	6.1E+00	100.0		

Table 3-28a. Inventory of radiological contaminants (listed by quantity) disposed of on Pad A (activity at time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
U-238	2.5E+01	65.0	2.0E+01	3.0E+01
Pu-241	5.5E+00	14.2	4.5E+00	6.6E+00
U-234	4.7E+00	12.3	3.9E+00	5.6E+00
Co-60	1.8E+00	4.7	6.6E-01	4.0E+00
Pu-239	6.8E-01	1.8	4.7E-01	9.7E-01
U-235	3.3E-01	0.9	2.7E-01	4.0E-01
Pu-240	2.2E-01	0.6	6.4E-02	5.4E-01
Cs-137	2.1E-01	0.6	7.9E-02	4.7E-01
Pu-238	2.0E-02	< 0.05	1.7E-02	2.5E-02
Th-232	2.8E-05	< 0.05	2.3E-05	3.4E-05
Pu-242	1.2E-05	< 0.05	1.0E-05	1.5E-05
Total	3.8E+01	100.1 ^a		

a. Total in table does not equal 100.0% due to round off.

Table 3-28b. Inventory of radiological contaminants (listed alphabetically) disposed of on Pad A (activity at the time of disposal).

Radionuclide	Best estimate (Ci)	Percent of total (%)	Lower bound	Upper bound
Co-60	1.8E+00	4.7	6.6E-01	4.0E+00
Cs-137	2.1E-01	0.6	7.9E-02	4.7E-01
Pu-238	2.0E-02	<0.05	1.7E-02	2.5E-02
Pu-239	6.8E-01	1.8	4.7E-01	9.7E-01
Pu-240	2.2E-01	0.6	6.4E-02	5.4E-01
Pu-241	5.5E+00	14.2	4.5E+00	6.6E+00
Pu-242	1.2E-05	<0.05	1.0E-05	1.5E-05
Th-232	2.8E-05	<0.05	2.3E-05	3.4E-05
U-234	4.7E+00	12.3	3.9E+00	5.6E+00
U-235	3.3E-01	0.9	2.7E-01	4.0E-01
U-238	2.5E+01	65.0	2.0E+01	3.0E+01
Total	3.8E+01	100.1 ^a		

a. Total in table does not equal 100.0% due to round off.

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